

Bureau of Ocean Energy Management Geological and Geophysical (G&G) Workshop

Presenters and Subject Matter Experts (SMEs)

- John Johnson (G&G Permitting)
- Teree Campbell (Survey Buffer Enforcement)
- Tom Bjerstedt (Site Specific Environmental Analysis or SEA)
- Doug Jones (Marine Archaeology)
- Deborah Epperson & Tre Glen (Protected Species and Protected Species Observers, Passive Acoustic Monitoring)
- Beth Nord (Atlantic Programmatic Environmental Impact Statement (PEIS))
- Ron Brinkman (G&G Gulf of Mexico and Atlantic PEIS)

Main Topics

- Authority and Regulations
- Current Permitting Process
- Historical and Expected Permitting Time Frame
- Completing the Application
 - Application
 - Vessel Changes
 - Permit Extensions
 - Status Reports
 - Permit Modifications
 - Permit Final Report
- National Marine Fisheries Service (NMFS) Review

Main Topics Cont.

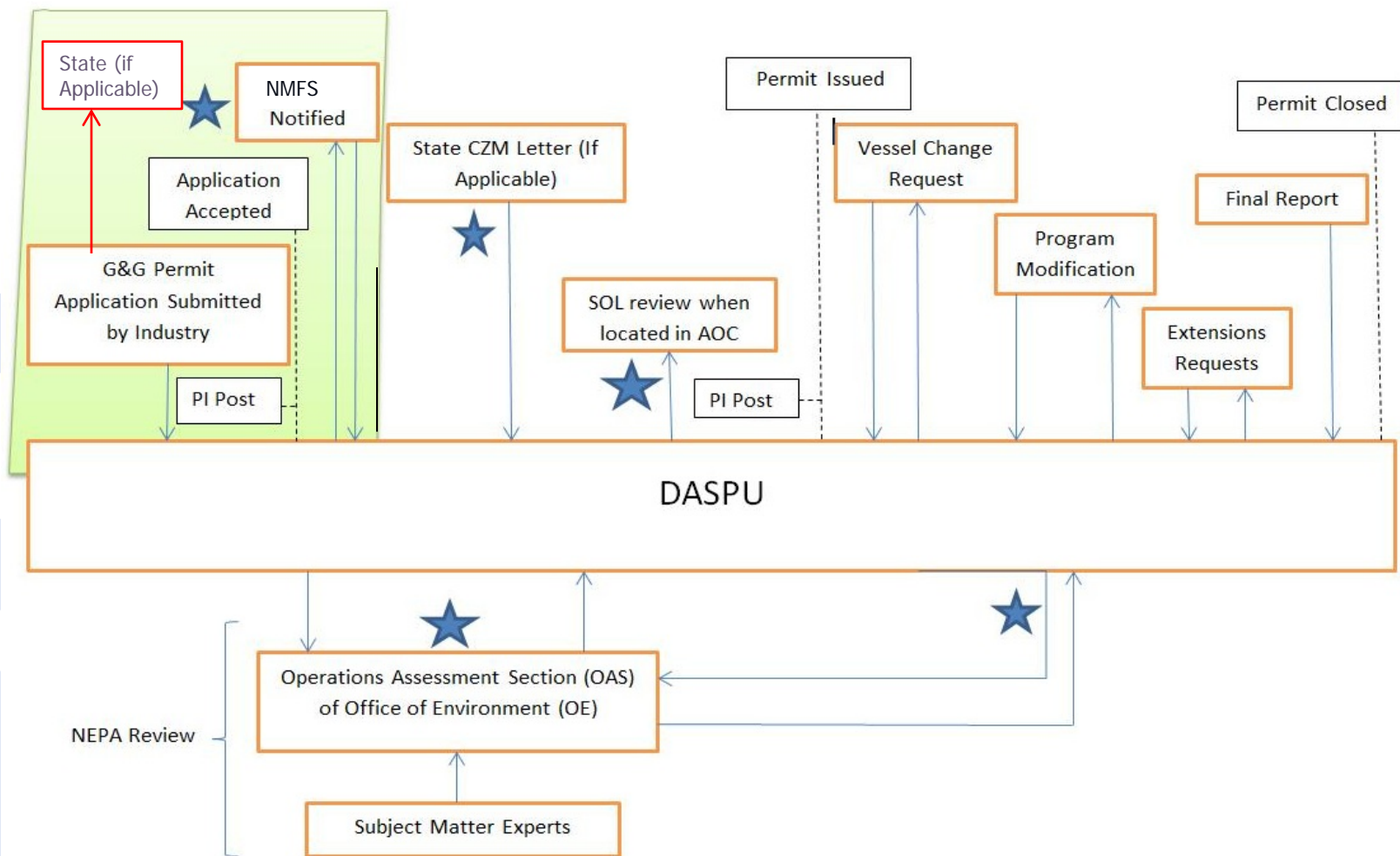
- National Resource Defense Council (NRDC) Lawsuit
- Incidence of Non-Compliance (INC)
- National Environmental Protection Act (NEPA) review
 - Site-Specific Environmental Review
 - Archaeology
- Protected Species Observer (PSO) Program & Passive Acoustic Monitoring (PAM) Q&A
- GOM PEIS Update
- Atlantic PEIS Update

G&G Permitting Process

- John Johnson, supervisor of the Data Acquisition and Special Projects Unit (DASPU)
- Regulations
 - 30 CFR Part 551 – Geological and Geophysical Explorations of the Outer Continental Shelf
 - 30 CFR Part 580 – Prospecting For Minerals Other Than Oil, Gas, and Sulphur on the Outer Continental Shelf

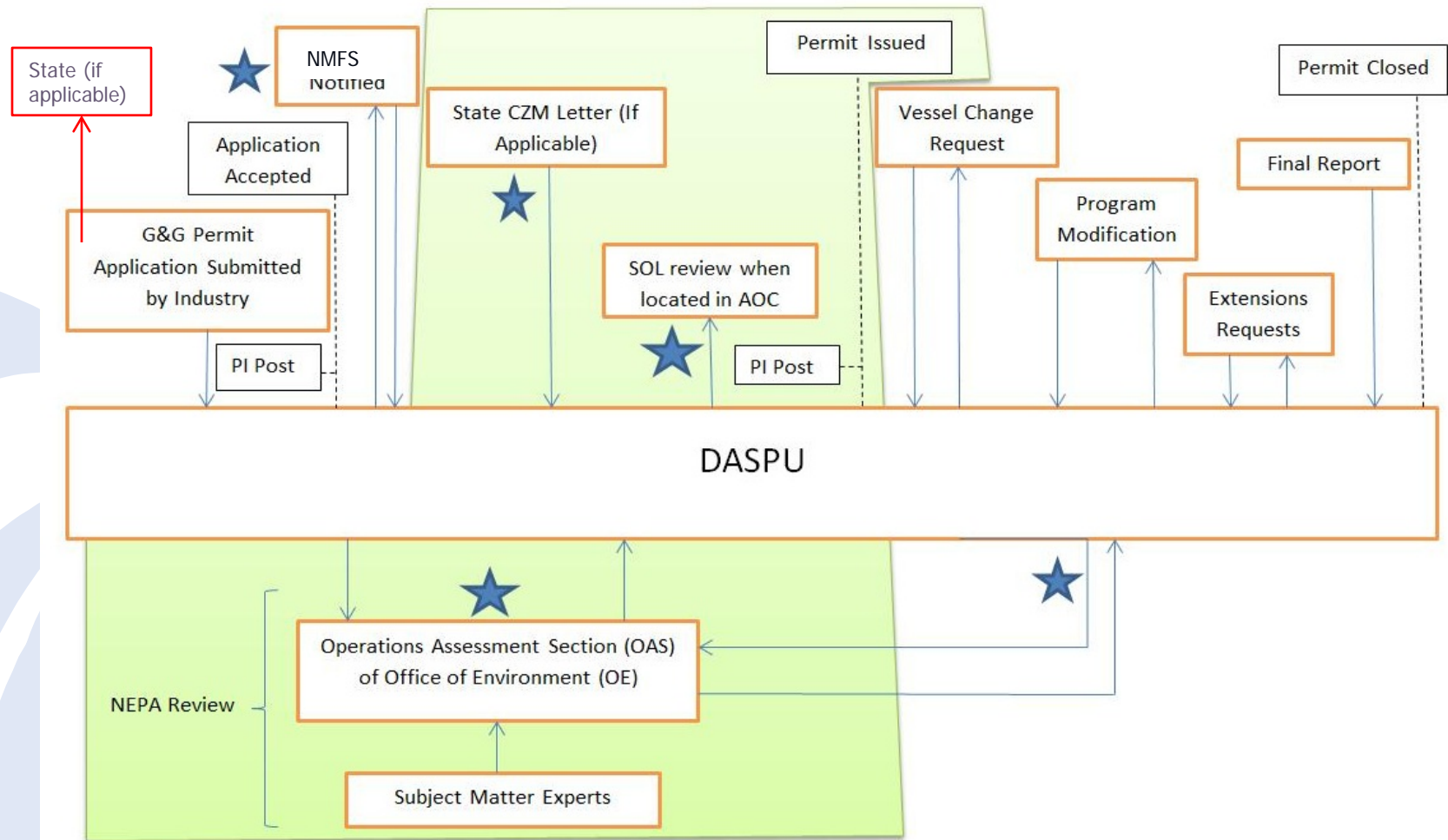
G&G Permitting Process Cont.

Application Completeness

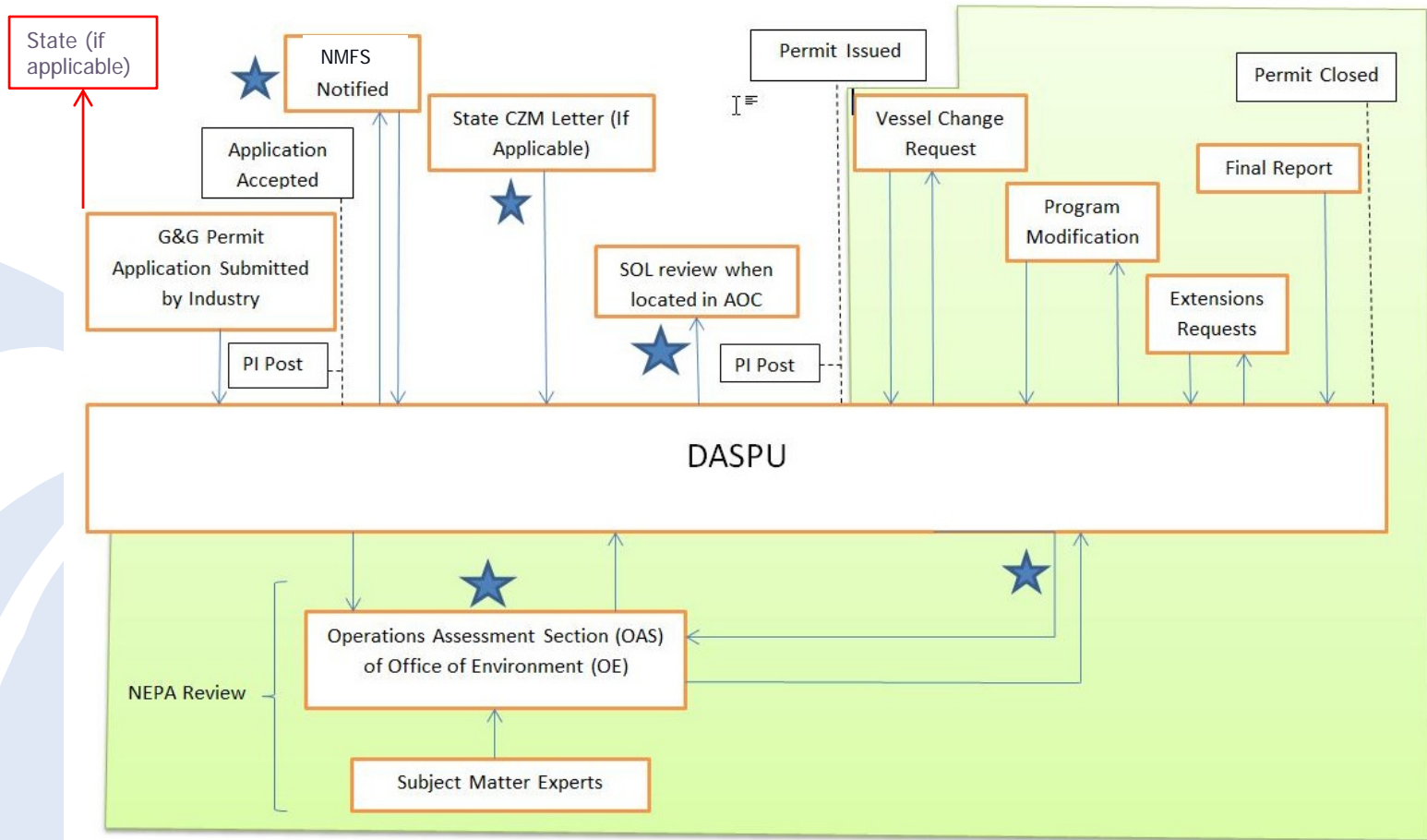


G&G Permitting Process Cont.

Permit Processing



G&G Permitting Process Cont. Operations



G&G Permitting Process Cont.

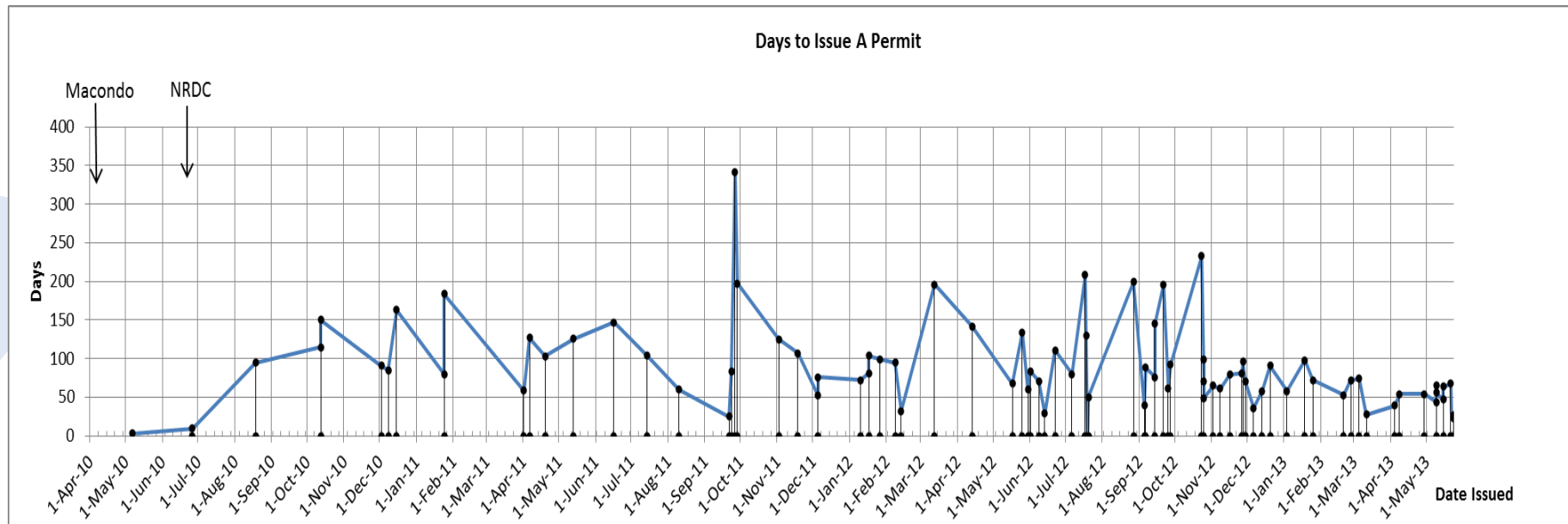
Time Frames

- Data Acquisition and Special Projects Unit (DASPU) uses 10 business days as total handling time goal – from receipt of application to issuance of permit
- Operational Assessment Section (OAS) of the Office of Environment
 - All surveys that use airguns or are bottom disturbing require a Site Specific Environmental Analysis (SEA)
 - Goal is to provide DASPU with a SEA within 60 calendar days for deep seismic – less for hi-resolution surveys



G&G Permitting Process Cont.

Time Frames Cont.



- January 2013: 70 days on average
- May 2013: 56 days on average

Questions ?

G&G Permitting Process Cont.

General

- New Application Form (2012)
 - New and more detailed information
 - Additional environmental issues
 - Closer public scrutiny
 - More in-depth environmental review
 - The completed application *must accurately represent your proposed operations*
 - Information submitted
 - Literature (is good for specifications but may not represent *your* operations)
 - Diagram or Schematic (can save a thousand words; or phone calls and time)
 - Narrative (sooner or later you have to explain what you plan to do; the process; pictures & literature alone don't do it)

G&G Permitting Process Cont.

General Cont.

- BOEM prefers appendices/attachments instead of inserting pages in the application
(one question per appendix/attachment)
- **NEW:** Only need to send one set of paper attachments instead of four
- Label the public information (PI) map “Public Information”
- Label the proprietary map “Proprietary”
- The same person that signs the application should sign the permit. Though not required, BOEM prefers that the company who will own the data at the end of the day sign the application and permit.

G&G Permitting Process Cont.

General Cont.

- 4 hardcopies of the Application with an original signature
- 4 hardcopies of the Permit with an original signature
- 1 digital copy
- 1 page size hardcopy plat; GeoPDF of a map
- Map Shape files (do not include cultural information)

G&G Operations Cont.

New Application

- **Section A: General Information**
 - **Section A.1**

A. General Information

1. The activity will be conducted by:

_____ For _____
Service Company Name Purchaser(s) of the Data

E. Certification

I hereby certify that foregoing and attached information are true and correct.

Print Name: _____

SIGNED _____ DATE _____

- You **certify** that the information provided is “**true and correct**”.

Questions ?

G&G Operations Cont.

– Section A.4

4. The expected commencement date is: _____

The expected completion date is: _____

- The applicant is not held to these dates
- They give BOEM an idea of when the applicant would like to start
- They give BOEM an idea of how long the applicant thinks the survey will take

G&G Permitting Process Cont.

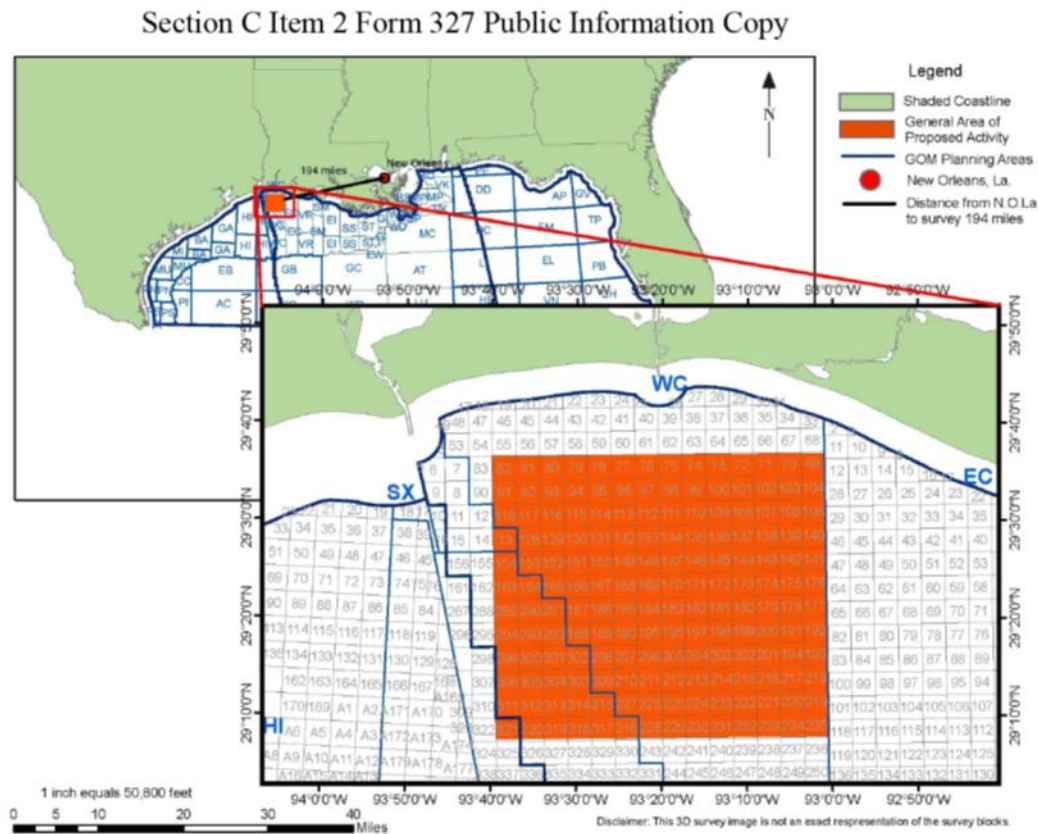
– Section A.6

| | | |
|--|--------------------|--------------------|
| 6. The vessel(s) to be used in the operation is (are): | | |
| Name (s) | Registry Number(s) | Registered owners) |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

- If vessel names are present, they will be released with PI copy of *application*
- If vessel names are supplied on a *separate sheet*, they will be released with PI copy of *permit*
- Put the number of survey vessels on the application if supplying an *attachment* with the vessel names
- Include Call Sign
- Support Vessels? To be visited at a later date

G&G Permitting Process Cont.

- **Section C:** Complete for Geophysical Exploration for Mineral Resources or Geophysical Scientific Research
 - **Section C.2** Public information map should be a page size plat labeled “Public Information” and a GeoPDF file.



G&G Permitting Process Cont.

– Section C.3

3. List all energy source types to be used in the operation(s): (Air gun, air gun array(s), sub-bottom profiler, sparker, towed dipole, side scan sonar, etc.).

- List the active energy sources to be deployed
 - Includes multi beam echo sounders, side scan sonar
 - All high resolution sources
 - Each source listed must also be entered in the Section D (proprietary data) source table

Questions ?

G&G Permitting Process Cont.

- Section D: Proprietary Information Attachment (Geophysical Permit)
 - Section D.1 and D.2

1. Detailed narrative, modeling of sound propagation, and visual description of the energy source(s) and streamer(s) (receiving array): _____
2. Attach a map view diagram to demonstrate vessel(s) source and receiver(s) configuration. Label each vessel indicating its function and include the dimensions of streamer(s), tow fish, etc. Indicate the number of chase and alternate vessels to be used.

- Physical characterization of your survey
- Physical characterization of your source array
- Theoretical characterization of your source array (source modeling)

G&G Permitting Process Cont.

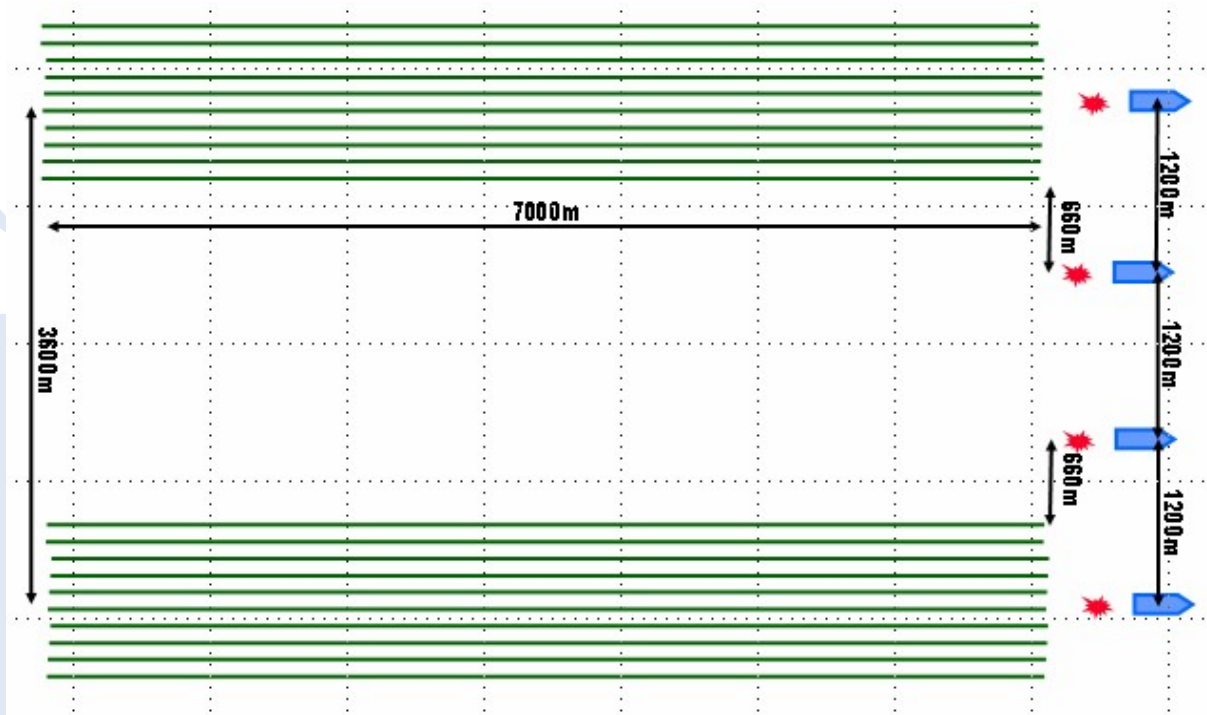
- Physical characterization (configuration) of your survey and source array:
 - What is the configuration/physical parameters of your multi-vessel survey?
 - Which vessels are the source vessels, streamer only, combination, etc.
 - What is the configuration/physical parameters of your towed source array and streamers?
 - Best illustrated by diagrams & schematics

G&G Permitting Process Cont.

Physical characterization/configuration of your survey:

Example 1: Multi-Vessel Towed Array

Survey Configuration

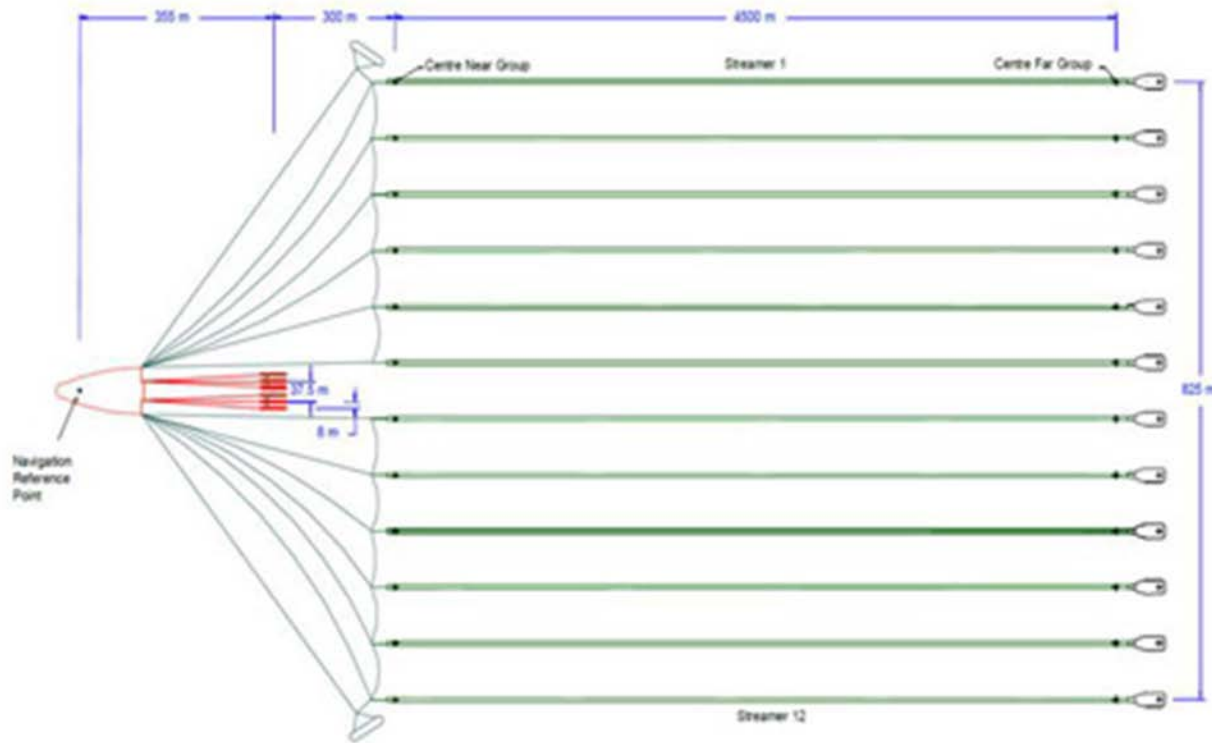


G&G Permitting Process Cont.

Physical characterization of your survey:

Example 2: Single Vessel Towed Array

Vessel (streamer/source) Configuration

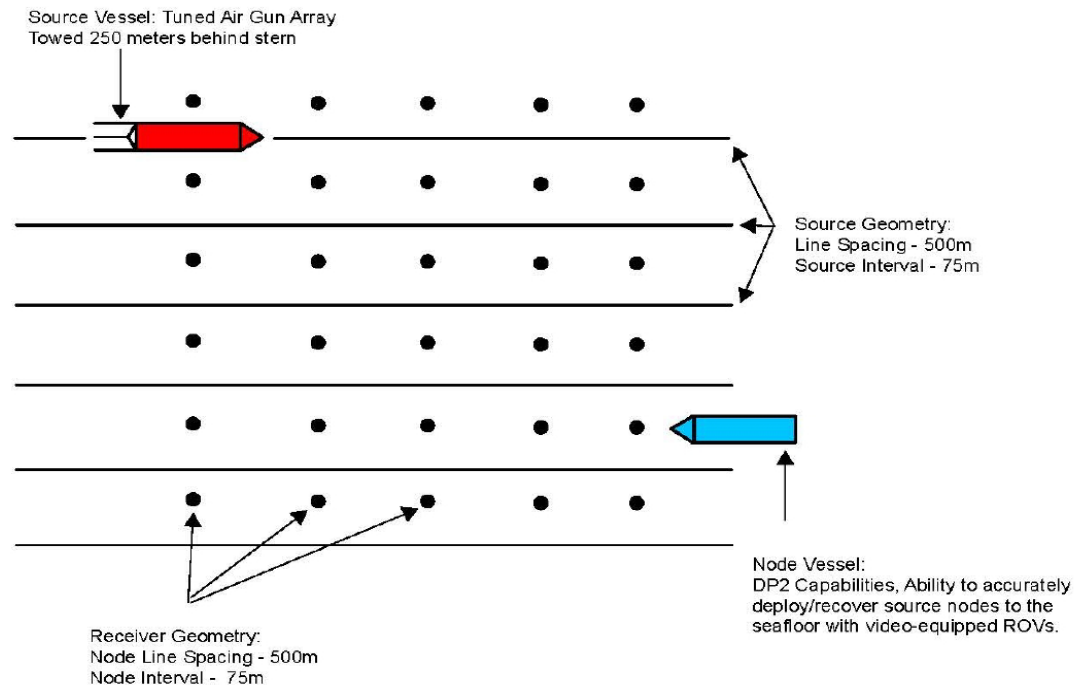


G&G Permitting Process Cont.

Physical characterization of your survey:

Example 3: Node Survey

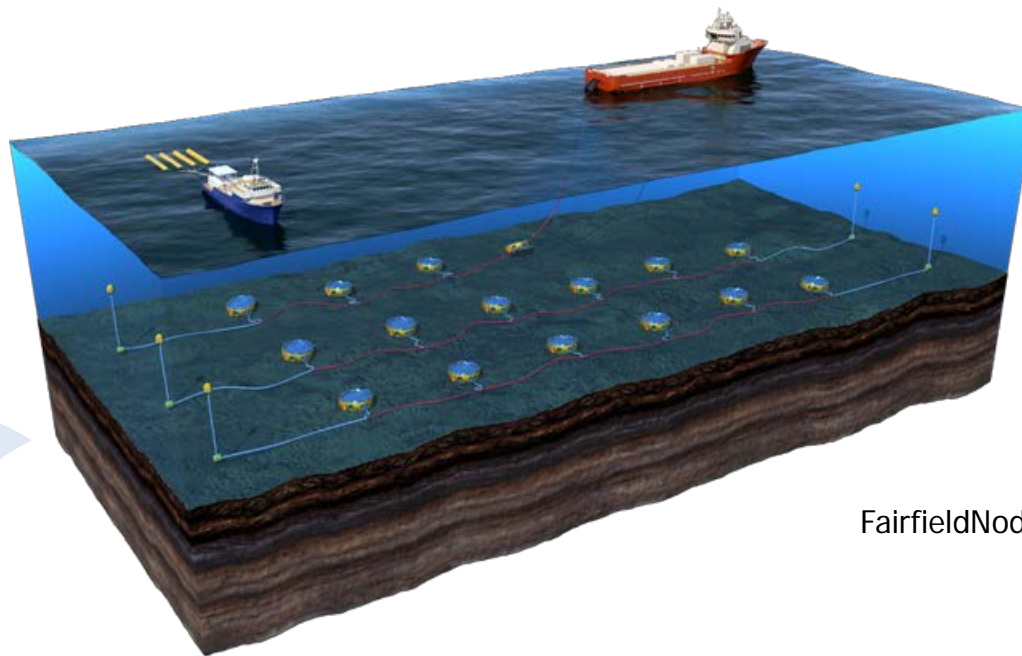
Survey Configuration



G&G Permitting Process Cont.

Physical characterization of your survey:

Example 4: Node Survey

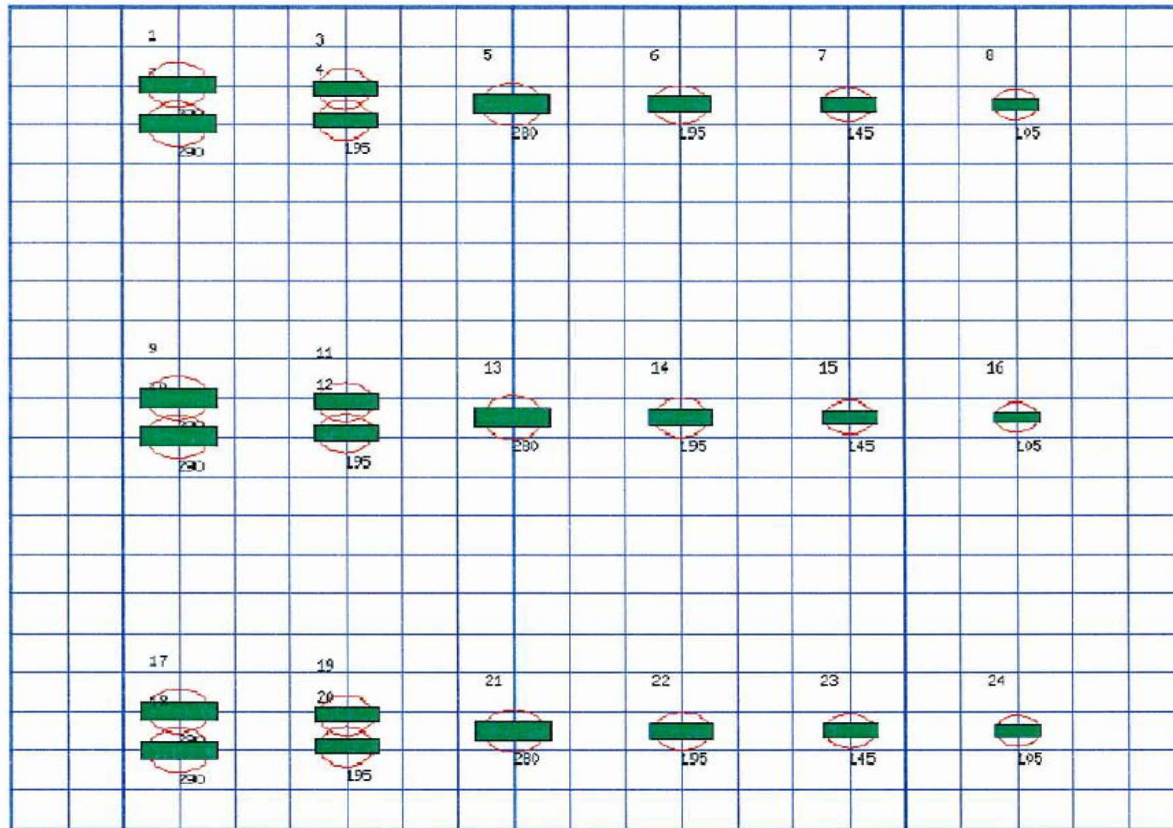


FairfieldNodal

G&G Permitting Process Cont.

Physical characterization of your source array:

Source Array

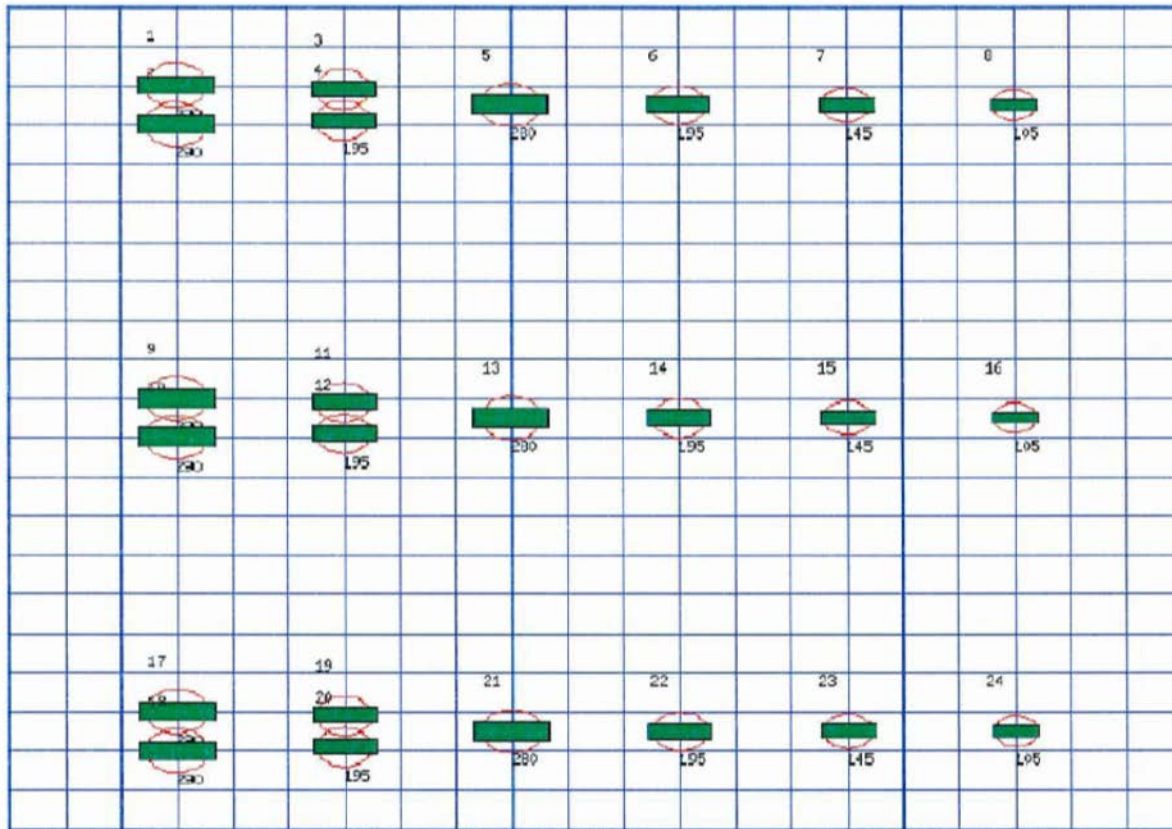


G&G Permitting Process Cont.

- Theoretical characterization of your source array (source modeling)
 - How is your array expected to behave
 - Report generated by your modeling software (Gundalf, Nucleus, etc)
 - What are the main things BOEM is looking for?

G&G Permitting Process Cont.

Modeling Information:



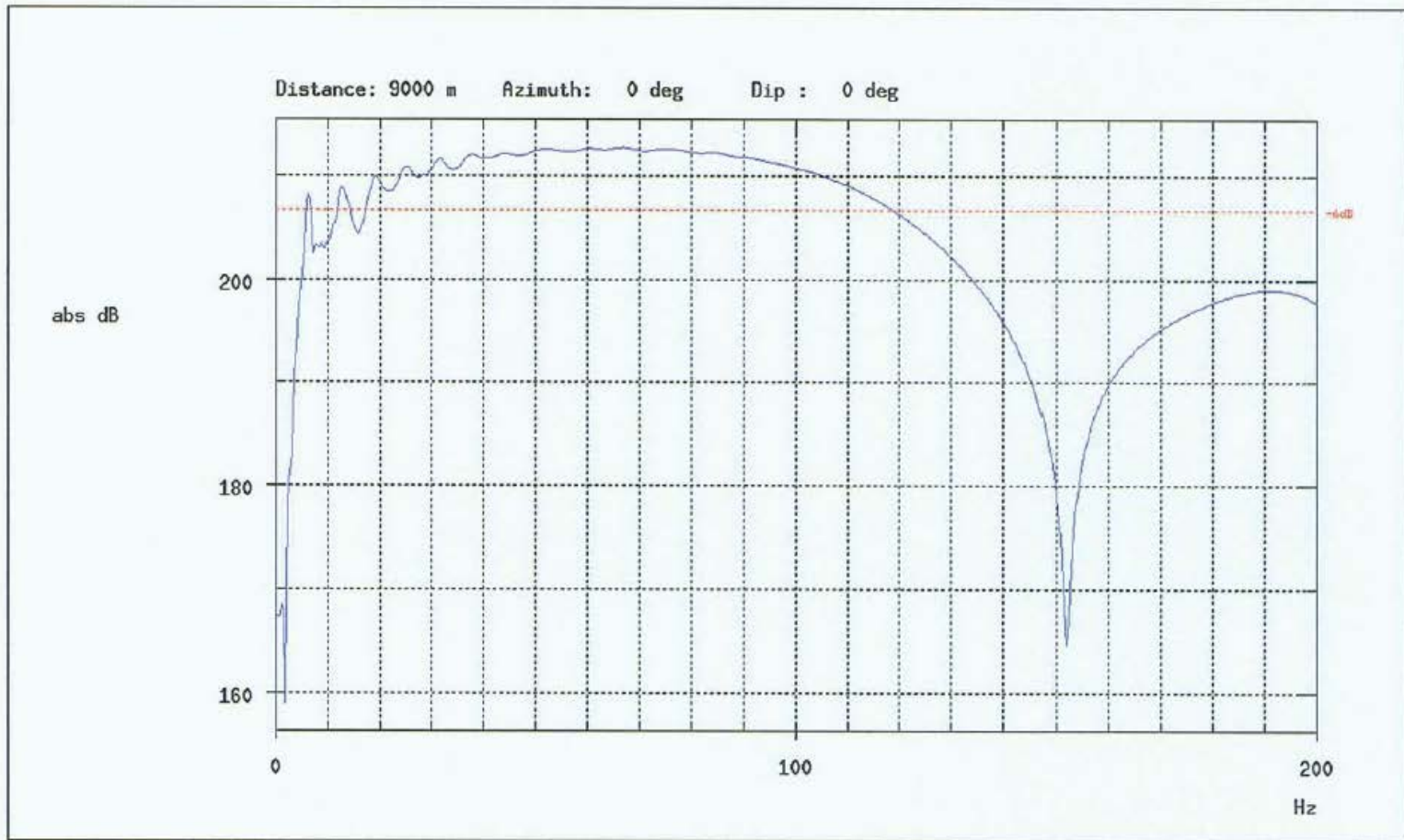
G&G Permitting Process Cont.

Modeling Information:

| Array parameter | Array value |
|---------------------------------------|--|
| Number of guns | 24 |
| Total volume (cu.in.) | 5005.0 (83.3 liters) |
| Peak to peak (bar-m.) | 115 (11.5 MPa, 261 db re 1 microPascal. at 1 m.) |
| Zero to peak (bar-m.) | 51 (5.1 MPa, 254 db re 1 microPascal. at 1 m.) |
| RMS pressure (bar-m.) | 8.1 (0.81 MPa, 238 db re 1 microPascal. at 1 m.) |
| Primary to bubble (peak to peak) | 17.6 |
| Bubble period to first peak (sec.) | 0.0835 |

G&G Permitting Process Cont.

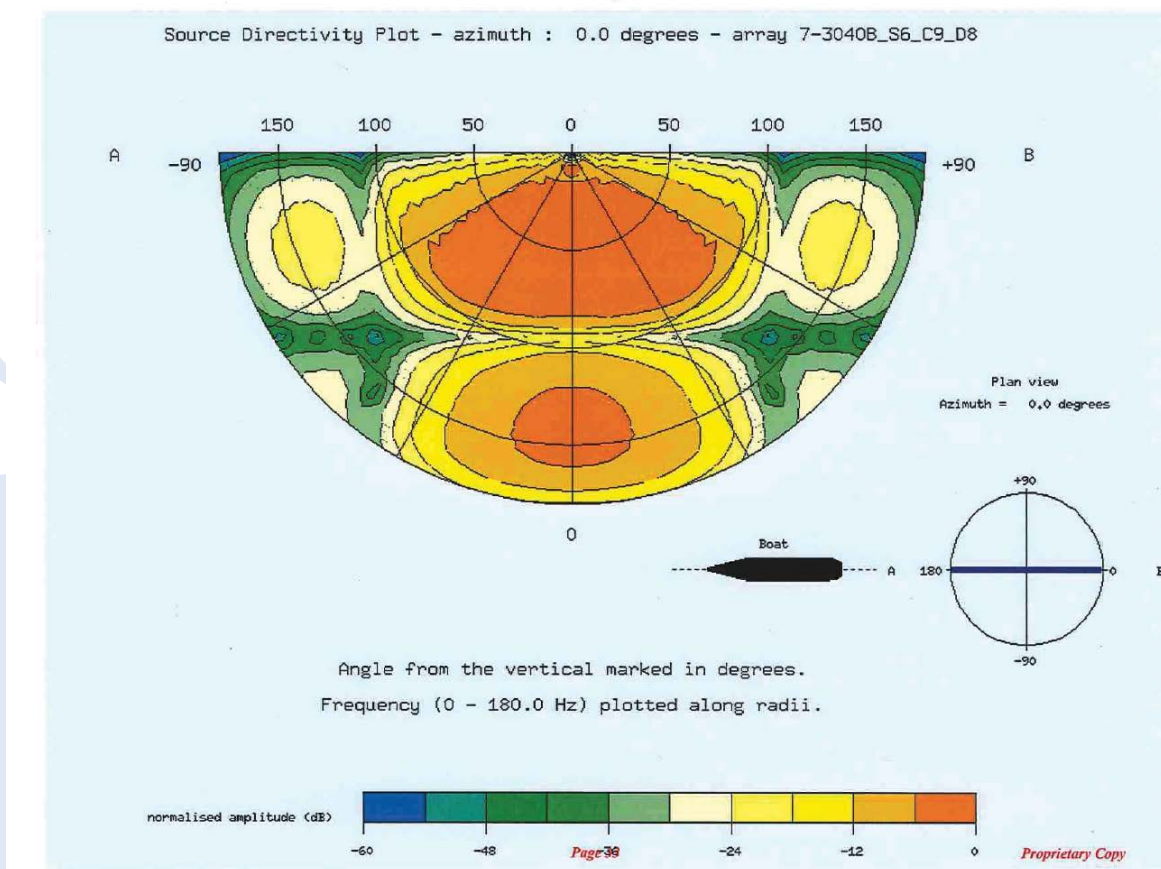
Modeling Information:



G&G Permitting Process Cont.

Modeling Information:

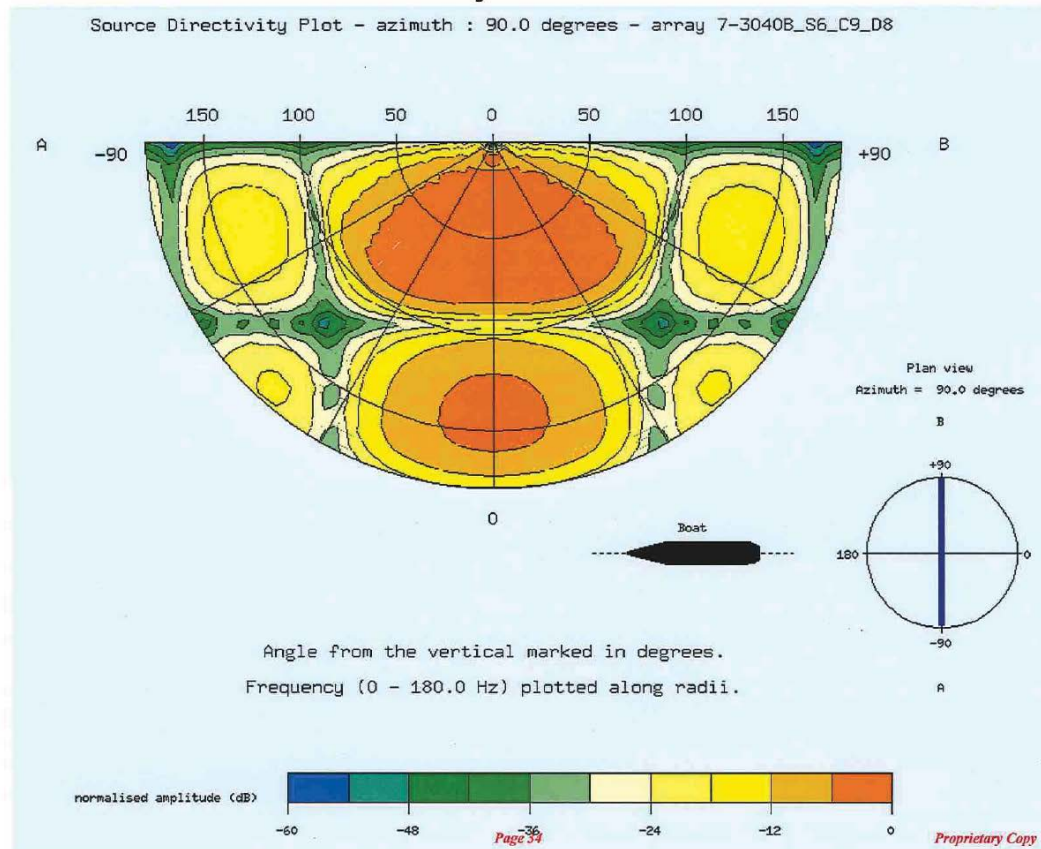
Directivity - Inline



G&G Permitting Process Cont.

Modeling Information:

Directivity - Cross line



Questions ?

G&G Permitting Process Cont.

– Section D.3

3 List each energy source to be used (e.g., airgun, airgun array(s), sparker, towed dipole, side scan sonar, sub bottom profiler, etc.). Indicate the source's manufacturer, model, total energy output per impulse in dB (RMS), peak to peak in db, frequency in Hz (if applicable) etc.

| Energy Source | Manufacturer | Model | Gun Size (cu. in.) | Total Energy Output Peak to Peak in db, Amp, etc. | Total Energy Output rms in db | Frequency (Hz-kHz range) |
|---------------|--------------|-------|--------------------|---|-------------------------------|--------------------------|
| | | | | | | |

- This should be filled out **completely** (for hi-resolution surveys as well)
- NOT scattered around in multiple appendices or in various literature attachments

G&G Permitting Process Cont.

- Section D.7

7. CSEM, OBN, Magnetotelluric, and OBC surveys: Describe the node deployment and retrieval procedures. Indicate the location (latitude and longitude coordinates), number and spacing of any ocean bottom receivers, cables, and anchors. If anchors will not be retrieved, provide their physical composition and rate of decomposition. Location data may be submitted digitally on a CD (attach separate page if necessary).

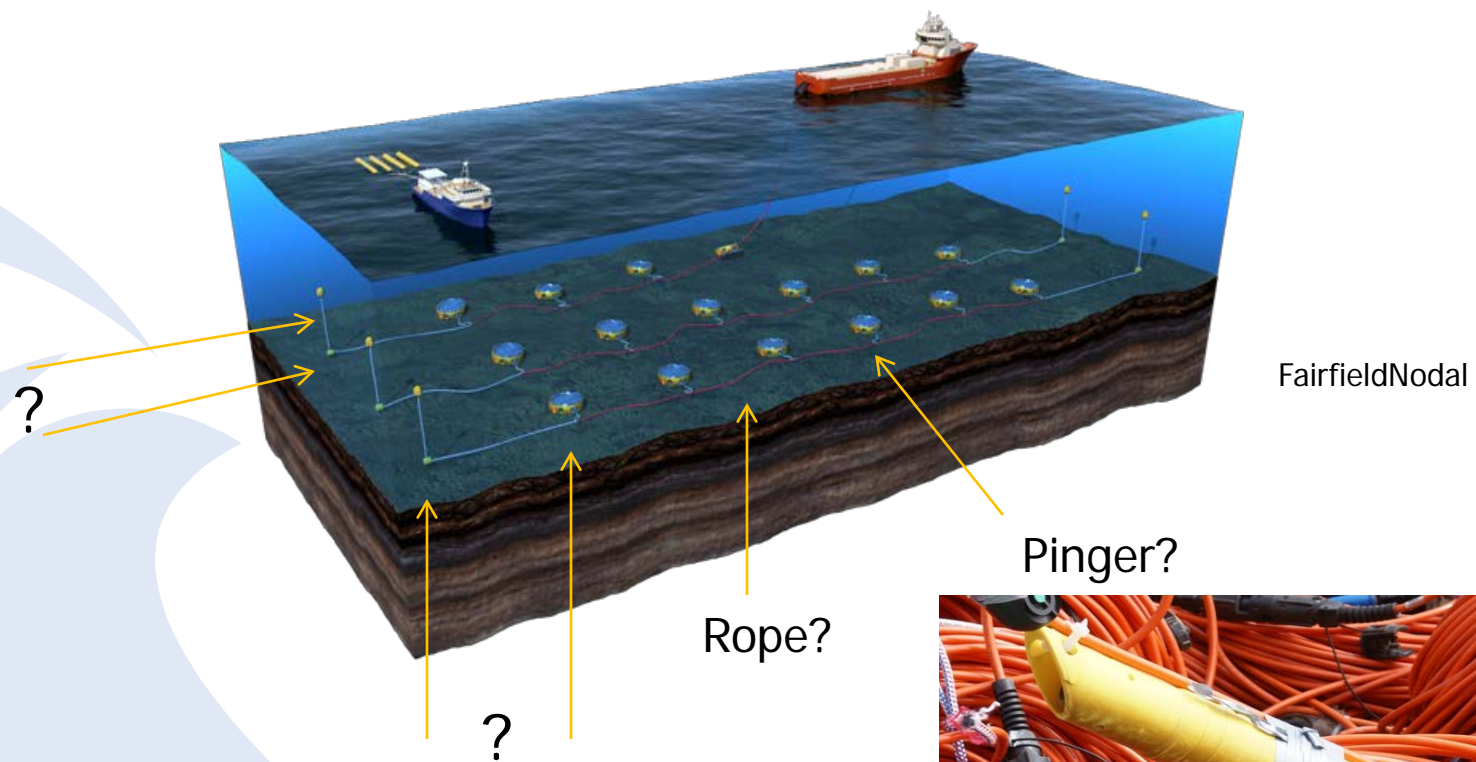
- Nodes/CSEM Receivers: Placement accuracy?
- OBC/Tethered Node operations: These are the most involved types of application because of entanglement issues. The operation is best handled using a narrative and diagrams or schematics.
 - Describe deployment and retrieval procedures (nodes, floats)
 - How many cables are down at one time?
 - How long are the cables and what is the cable spacing?

G&G Permitting Process Cont.

- OBC/Tethered Node operations: Cont.
 - Receiver/node spacing?
 - On average, how long will the receivers/cables be on the bottom?
 - Are the cables buoyed with acoustic releases at one or both ends?
 - Pinger attachment method or is it built in?
 - Rope or cable characteristics (diameter, material, will it float, etc.)
 - Do you use external batteries or floats? How are they attached?

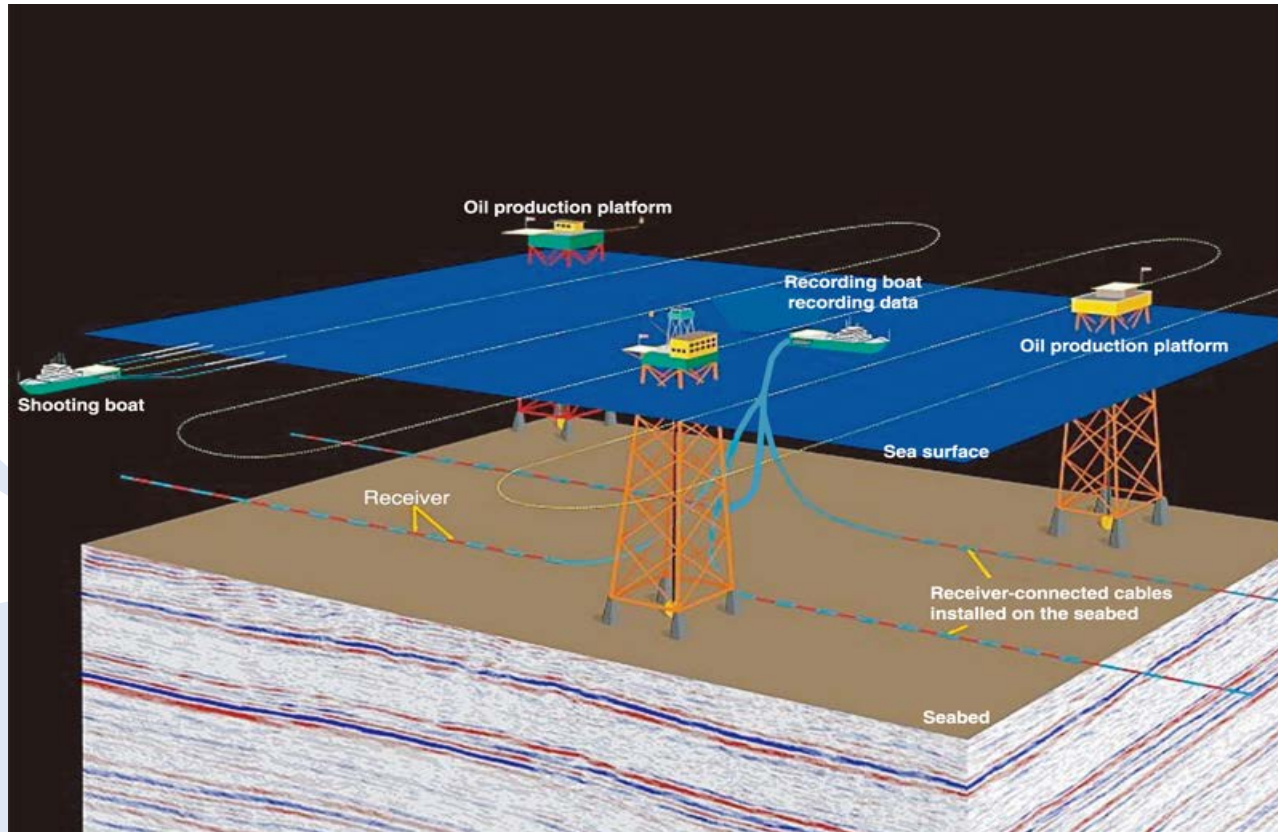
G&G Permitting Process Cont.

OBC/Tethered Node Operations Cont.:



G&G Permitting Process Cont.

OBC/Tethered Node Operations Cont.:



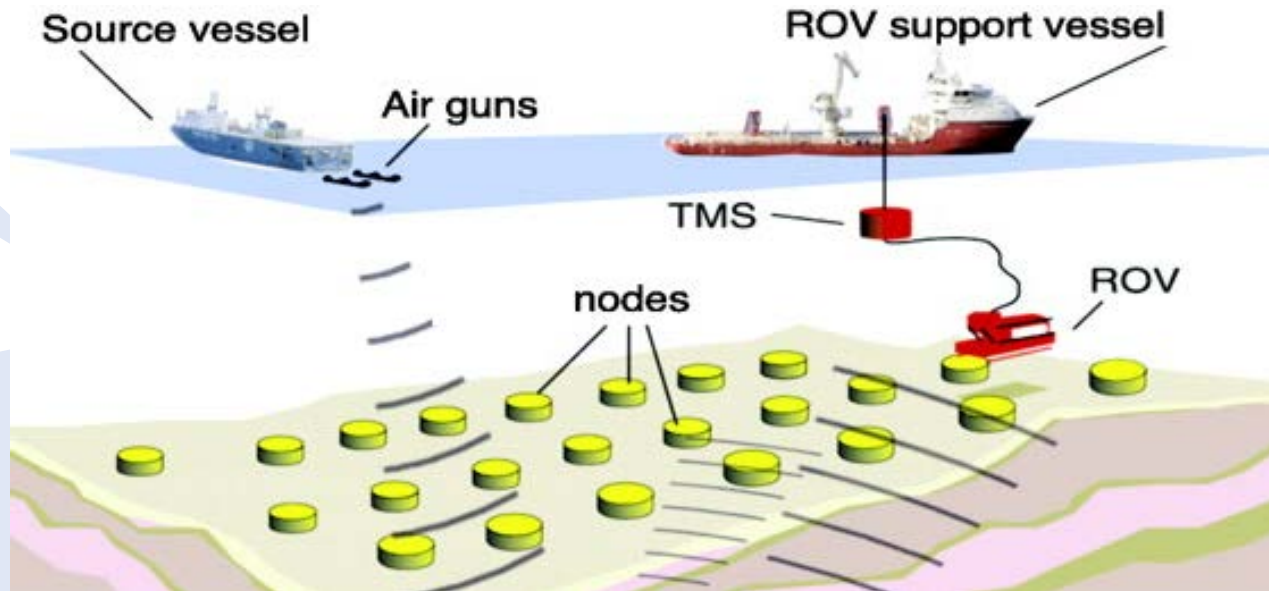
Abu Dhabi Oil Co.

- Dynamically Positioned vessel vs. jackup as a recording vessel

G&G Permitting Process Cont.

Totally Autonomous Node Operations

- An illustration and short narrative



Leading Edge/BP

Questions ?

G&G Permitting Process Cont.

– Section D.10 & D.11

10. Provide the company identification name of the proposed survey (e.g. Deep Six Survey). List all proposed initial and final processed data sets that will result from acquisition under this activity (e.g. 3D Time Migration processed as Kirchhoff Depth Migration, Wave Equation Migration, etc).

11. Estimated date (month and year) on which initial and final processing will be available for all proposed processed data sets:

- Give BOEM the best estimate of the planned processing and survey name
- Best estimate of when survey will be available

G&G Permitting Process Cont.

Proprietary Maps and Shape Files

– Section D.12

- Map showing the location and areal extent of your survey (suggest GeoPDF) and appropriate shape files (suggest ArcGIS)
- Map should be labeled “Proprietary”
- Map (not shape files) should include protraction areas and block numbers

G&G Permitting Process Cont.

Proprietary Maps and Shape Files

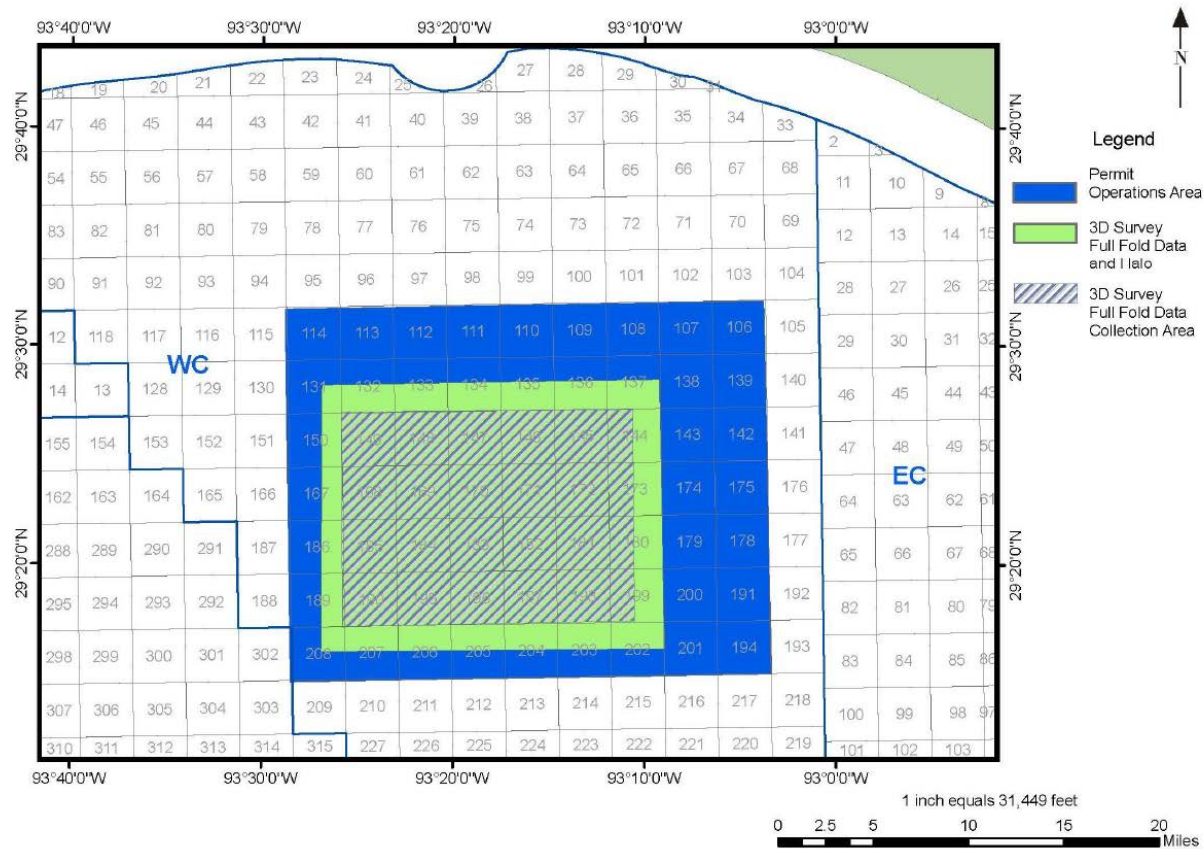
– Section D.12 Cont.

- Map should illustrate:
 - Operational area
 - Airgun activity
 - Full fold data
- Node Surveys:
 - Provide preplot shape files of node and cable locations with application.
 - Provide postplot shape files of node and cable locations with final report.

G&G Permitting Process Cont.

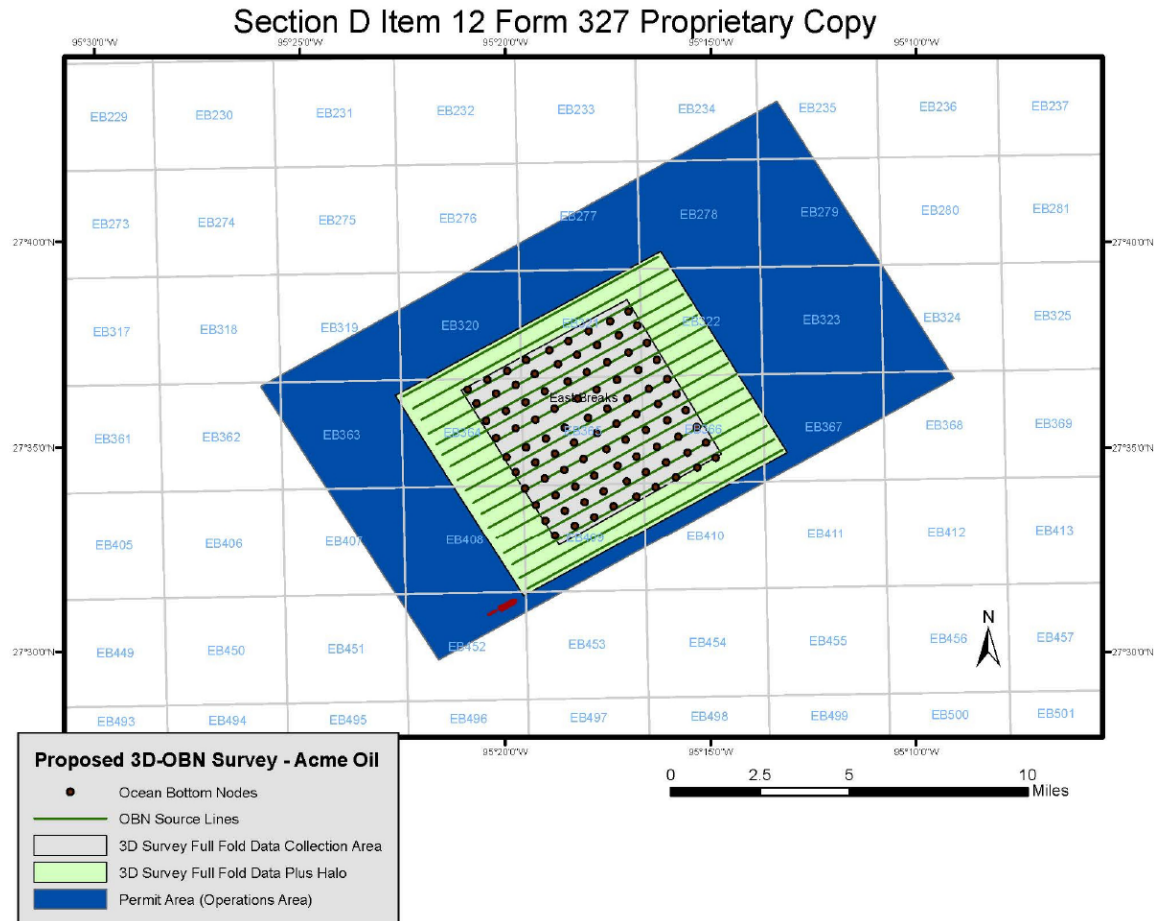
Proprietary Map Streamer Example

Section D Item 12 Form 327 Proprietary Copy



G&G Permitting Process Cont.

Proprietary Map Node Example



G&G Permitting Process Cont.

- Section D: Proprietary Information Attachment (Geologic Permit)

- Section D.3

- Provide coring, etc. locations using latitudes and longitudes in hard copy and digital format

Attachment C
Form 327, Section D, Item 3

PROPRIETARY COPY

| SampleNo. | ID | Type | Latitude | Longitude |
|-----------|-------|-------------|----------|-----------|
| 1 | PC-1 | Piston Core | 29.25500 | -92.94200 |
| 2 | PC-2 | Piston Core | 29.25500 | -92.89600 |
| 3 | PC-3 | Piston Core | 29.25500 | -92.85000 |
| 4 | PC-4 | Piston Core | 29.25500 | -92.80300 |
| 5 | PC-5 | Piston Core | 29.25500 | -92.75700 |
| 6 | PC-6 | Piston Core | 29.25500 | -92.71100 |
| 7 | PC-7 | Piston Core | 29.25500 | -92.66500 |
| 8 | PC-8 | Piston Core | 29.21500 | -92.94200 |
| 9 | PC-9 | Piston Core | 29.21500 | -92.89600 |
| 10 | PC-10 | Piston Core | 29.21500 | -92.85000 |
| 11 | PC-11 | Piston Core | 29.21500 | -92.80300 |
| 12 | PC-12 | Piston Core | 29.21500 | -92.75700 |
| 13 | PC-13 | Piston Core | 29.21500 | -92.71100 |
| 14 | PC-14 | Piston Core | 29.21500 | -92.66500 |
| 15 | PC-15 | Piston Core | 29.17400 | -92.94200 |
| 16 | PC-16 | Piston Core | 29.17400 | -92.89600 |
| 17 | PC-17 | Piston Core | 29.17400 | -92.85000 |
| 18 | PC-18 | Piston Core | 29.17400 | -92.80300 |
| 19 | PC-19 | Piston Core | 29.17400 | -92.75700 |
| 20 | PC-20 | Piston Core | 29.17400 | -92.71100 |
| 21 | PC-21 | Piston Core | 29.17400 | -92.66500 |
| 22 | HF-1 | Heat Flow | 29.27100 | -92.94200 |
| 23 | HF-2 | Heat Flow | 29.27100 | -92.89600 |
| 24 | HF-3 | Heat Flow | 29.27100 | -92.85000 |
| 25 | HF-4 | Heat Flow | 29.27100 | -92.80300 |
| 26 | HF-5 | Heat Flow | 29.27100 | -92.75700 |
| 27 | HF-6 | Heat Flow | 29.27100 | -92.71100 |
| 28 | HF-7 | Heat Flow | 29.27100 | -92.66500 |
| 29 | HF-8 | Heat Flow | 29.23000 | -92.94200 |
| 30 | HF-9 | Heat Flow | 29.23000 | -92.89600 |
| 31 | HF-10 | Heat Flow | 29.23000 | -92.85000 |
| 32 | HF-11 | Heat Flow | 29.23000 | -92.80300 |
| 33 | HF-12 | Heat Flow | 29.23000 | -92.75700 |
| 34 | HF-13 | Heat Flow | 29.23000 | -92.71100 |
| 35 | HF-14 | Heat Flow | 29.23000 | -92.66500 |
| 36 | HF-15 | Heat Flow | 29.18900 | -92.94200 |
| 37 | HF-16 | Heat Flow | 29.18900 | -92.89600 |
| 38 | HF-17 | Heat Flow | 29.18900 | -92.85000 |
| 39 | HF-18 | Heat Flow | 29.18900 | -92.80300 |
| 40 | HF-19 | Heat Flow | 29.18900 | -92.75700 |
| 41 | HF-20 | Heat Flow | 29.18900 | -92.71100 |
| 42 | HF-21 | Heat Flow | 29.18900 | -92.66500 |

G&G Permitting Process Cont.

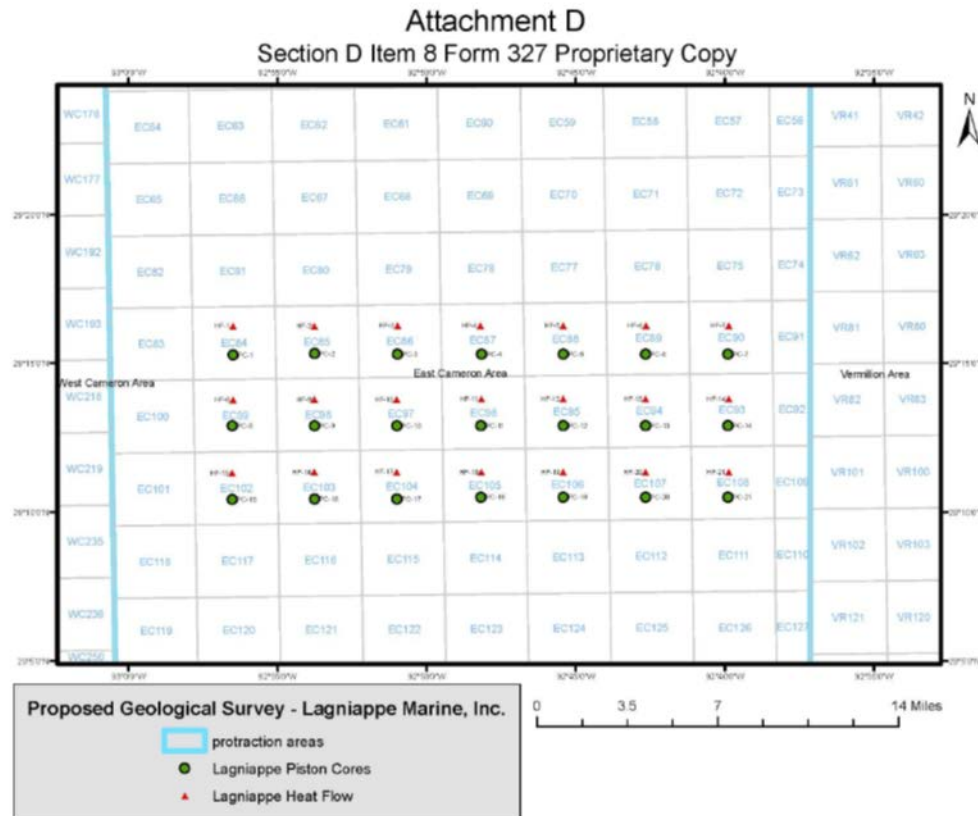
– Section D.1 and D.2

- Will you be anchoring or using a dynamically positioned vessel?
 - Anchor type
 - Anchor pattern to be used

G&G Permitting Process Cont.

– Section D.8 Proprietary Map

- Include a GeoPDF and shape files
- Label the map Proprietary



Questions ?

G&G Operations

- **Vessel Changes**

- Provide appropriate information for the new vessel (including its survey role) if swapping or adding a vessel
- Provide the permit number
- If time is critical a change may be requested & approved by email IF followed up with a written request
- *Adding* a source vessel is not a “vessel change”; it is a Program Modification

G&G Operations Cont.

- Permit Extensions

- Must be requested *prior to* the permit expiring
- If time is critical an extension may be requested and granted by email IF it is followed up with a written request
- Include the follow information:
 - Permit Number
 - Expiration of the current permit period
 - What extension are you requesting (1st, 2nd, etc.)
 - Extensions are good for 60 days (allowed 5 extensions); submit them early

G&G Operations Cont.

- **Permit Status Report**
 - Required every 60 days
 - May be submitted with an Extension Request
 - Include the following:
 - Permit number
 - Map showing the completed part of your survey (use different colors to indicate completed vs not completed); paper and GeoPDF format
 - Percent complete and number of blocks or line miles completed (cumulative)

G&G Operations Cont.

- **Permit Modification**

- As shown in the time line this is handled like a “mini permit” application
- Adding a source vessel is a permit modification
- If the extent of the permit area changes, submit updated map (GeoPDF) and shape files
- Include all appropriate information for any changes from the original application
- NEPA review

G&G Operations Cont.

- If the modification is significant it will be reviewed by NMFS
- If the modification is significant and located in an “area of concern” a copy of the SEA supplement will be reviewed by the Solicitor for the NRDC lawsuit
- May receive additional mitigations
- Small changes may only require a quick review; for example, small areal extent change

G&G Operations Cont.

- Final Report
 - Due 30 days after completion of operations

1. A description of the work performed and areal extent including number of line miles for 2-D or high resolution surveys or OCS blocks for 3-D geophysical data acquired;
2. Chart(s), map(s), or plat(s) depicting the areas and blocks in which any exploration or scientific research activities were conducted. These graphics must clearly indicate the location of the activities so that the data produced from the activities can be accurately located and identified
3. The dates on which the actual geophysical exploration or scientific research activities were performed;
4. A narrative summary of any: (a) hydrocarbon occurrences or environmental hazards observed and (b) adverse effects of the geophysical exploration or scientific research activities on the environment, aquatic life, archaeological resources, or other uses of the area in which the activities were conducted;

G&G Operations Cont.

– Final Report Cont.:

5. The estimated date on which the processed or interpreted data or information will be available for inspection by BOEM;
6. A final edited navigation file on suitable storage medium of all data or sample locations in latitude/longitude degrees including datum used. The navigation for 2D lines should include line name and locations for the first, last and every tenth SP. For 3D surveys, please supply a navigation file for the acquired track lines that includes the location of the first and last SP and/or the corner locations for the area acquired. Contact the G&G permitting office for the specific navigation required for this permitted activity. The digital file is to be formatted in standard SEG-P1, UKOOA P1-90 or other current, standard industry format, coded in ASCII. A printed data listing and a format statement are to be included;
7. Identification of geocentric ellipsoid (NAD 27 or NAD 83) used as a reference for the data or sample locations; and
8. Such other descriptions of the activities conducted as may be specified by the Supervisor.

Questions ?

G&G Permitting Process Cont.

National Marine Fisheries Service Review

- NMFS reviews of BOEM permit applications result from the 2010 lawsuit concerning Marine Mammal Protection Act (MMPA) compliance (Environmental group will review the reason for this)
 - Process
 - After application is **accepted** the digital version that you submit is emailed to NMFS for review
 - The statement below is printed on the top of each page such that it can not be removed and becomes part of the graphic:
- BOEM Proprietary Data For Government Use Only**
Do Not Release To The Public For 25 Years From **Date**
- NMFS has 15 calendar days to review the application

G&G Permitting Process Cont.

National Marine Fisheries Service Review

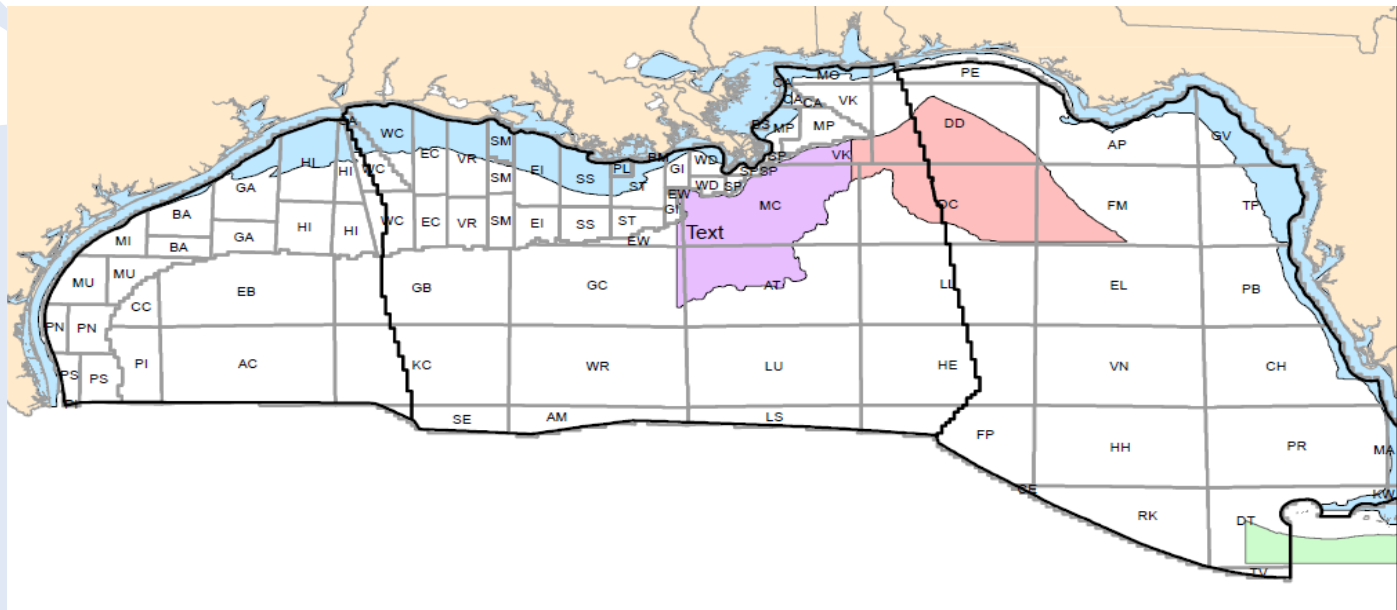
NMFS authority over the issuance of a BOEM permit: NMFS cannot approve or deny a G&G permit. Only BOEM has that authority. However, if NMFS determines that the activity described in the permit application was not considered under the 2007 Biological Opinion and there are no measures to mitigate the environmental impact of the activity, BOEM would, more than likely, not issue the permit.

Questions ?

G&G Permitting Process Cont.

NRDC Lawsuit Draft Stay Agreement

- BOEM is enforcing the provisions of the settlement agreement
 - 4 areas of concern
 - Permits in these areas must have the Site Specific Environmental Analysis reviewed by all parties



G&G Permitting Process Cont.

- All Permits Must:
 - Submit a non-duplicative statement
 - Submit a Sound Source Verification Letter
 - Using minimum array size necessary
 - Array is tuned to maximize radiation toward the sea floor; minimize horizontal propagation
 - Seasonal Restrictions for Coastal Waters Inshore of 20 meter isobath (March 1 to April 30)
 - Passive Acoustic Monitoring (PAM) will be required on all deep seismic surveys in waters deeper than 100 meters

G&G Permitting Process Cont.

- Seismic Restriction in the Eastern Planning Area
 - Essentially, deep seismic will not be permitted within the Eastern Planning Area portion of the Desoto Canyon Area of Concern
 - Read the Settlement Agreement on this in Section V.D
- Each Permittee will be given a copy of the Agreement and a handout reminding them of their obligations under the Agreement (VII.C)

G&G Permitting Process Cont.

– 30/40km buffer between deep seismic surveys

- 30 km buffer outside Areas of Concern
- 40 km buffer in Areas of Concern
- BOEM notifies you of other deep seismic surveys in your area
 - Permit Cover Letter
 - Email each permittee as a new permit is issued in their area

G&G Permitting Process Cont.

– **Bi-weekly reporting** (every 2 weeks until your permit ends)

- Report requirements

- State you have provided BOEM with your navigation data
- State any circumstances that caused the energy output from the source array to exceed that stated in your application
- Confirm you maintained the required buffer distance; explain why if you did not
- Confirm you complied with the terms of Section V of the agreement
- BOEM will provide a suggested reporting form

- Navigation data requirements

G&G Permitting Process Cont.

- List of dates of operations and total hours of acquisition

| Date | Comment |
|--------|----------------------------|
| 15-Apr | In production for 17.6 hrs |
| 16-Apr | In production for 22.6 hrs |
| 17-Apr | In production for 18.0 hrs |
| 18-Apr | In production for 23.5 hrs |
| 19-Apr | In production for 11.0 hrs |
| 20-Apr | In production for 15.6 hrs |
| 21-Apr | In production for 8.5 hrs |
| 22-Apr | In production for 23.5 hrs |
| 23-Apr | In production for 23.8 hrs |
| 24-Apr | In production for 23.6 hrs |

G&G Permitting Process Cont.

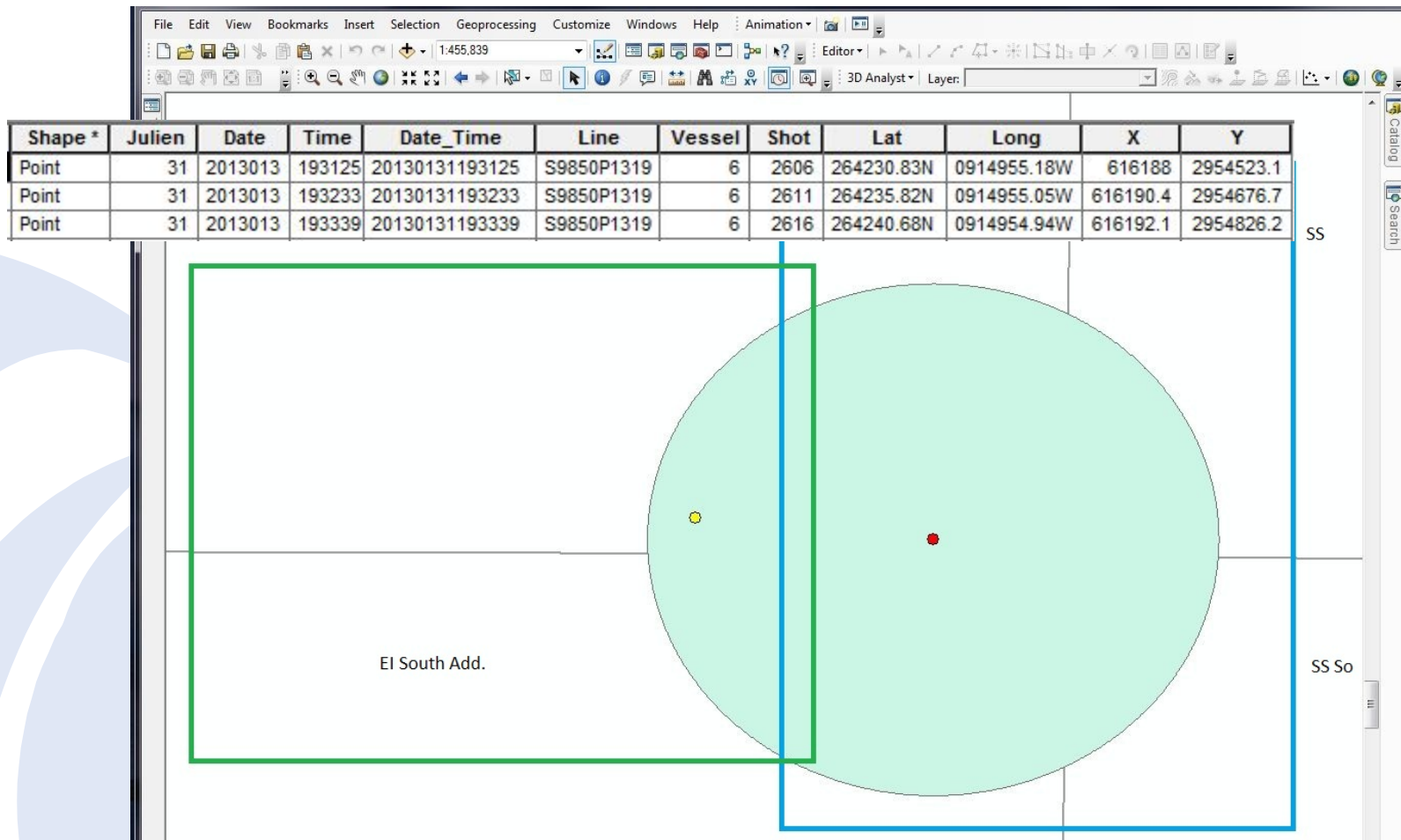
– Navigation Data

- P1-90 Format Requested
- Separate navigation file for **EACH** source vessel

| | | | | |
|-------------|----|---------------------------|-------------------|-----------|
| S10150P1320 | 22 | 4684271831.72N0914238.13W | 627586.23021129.8 | 032124834 |
| S10150P1320 | 22 | 4679271826.79N0914238.20W | 627586.03020977.9 | 032124941 |
| S10150P1320 | 22 | 4674271822.02N0914238.36W | 627582.93020831.3 | 032125049 |
| S10150P1320 | 22 | 4669271817.04N0914238.38W | 627583.93020677.8 | 032125156 |
| S10150P1320 | 22 | 4664271812.32N0914238.50W | 627582.33020532.6 | 032125303 |
| S10150P1320 | 22 | 4659271807.48N0914238.52W | 627583.23020383.6 | 032125410 |
| S10150P1320 | 22 | 4654271802.76N0914238.63W | 627581.73020238.5 | 032125517 |
| S10150P1320 | 22 | 4649271757.76N0914238.65W | 627582.83020084.5 | 032125626 |

G&G Permitting Process Cont.

Mandatory Buffer Separation Analysis



Questions ?

G&G Operations Cont.

- **Incidence of Non Compliance (INC)**
 - BSEE will issue environmental related INCs
 - BOEM will issue other INCs
 - Usual reasons for INCing:
 - Late Final Reports
 - Not informing BOEM in a timely manner when operations begin and end
 - BOEM will be posting buffer zone violations on its web site as well as bi-weekly reports

Permitting Information on the BOEM Web Site

- BOEM permitting Forms 327,328, 329:
<http://www.boem.gov/About-BOEM/Procurement-Business-Opportunities/BOEM-OCS-Operation-Forms/BOEM-OCS-Operation-Forms.aspx>
- Public Information Copy of the G&G Applications and Permits:
https://www.data.boem.gov/homepg/data_center/other/WebStore/pimaster.asp?appid=5
- GOMR G&G Web Page: <http://www.boem.gov/Oil-and-Gas-Energy-Program/Resource-Evaluation/Geological-and-Geophysical-Data-Acquisition/GGData-Gulf-of-Mexico.aspx>
- Atlantic Programmatic Environmental Impact Statement:
<http://www.boem.gov/Oil-and-Gas-Energy-Program/GOMR/GandG.aspx>

Permitting Information on the BOEM Web Site Cont.:

- GG Permits Mailbox: ggpermitsgomr@boem.gov
- John Johnson: (504) 736-2455 or john.johnson@boem.gov
- Teree Campbell: (504) 736-3231 or teree.campbell@boem.gov
- Chad Vaughan: (504) 736-2900 or chad.vaughan@boem.gov

IAGC Questions:

- **Nominate a point person at BOEM to receive the permit:**

DASPU

MS GM881A

Bureau of Ocean Energy Management

Gulf of Mexico Region

1201 Elmwood Park Blvd.

New Orleans, LA 70123-6092

- When a permit is assigned, the processor should contact you by email to identify themselves

- **Can there be flexibility in the duration of a permit in case operations run a little over: No**

IAGC Questions Cont.:

- When/will the application process go electronic?
Submitted in FY2015 budget initiative; Very questionable
- Questions on changing a contractor on a permit:
No problem, just let us know and the changes can be made.
- Why isn't the USGS required to obtain a permit?
 - One Federal agency does not permit another
 - BOEM has no authority over an activity that is for pure science

IAGC Questions Cont.:

- Why does BOEM publish survey maps to their web site?
 - Transparency (new world since Macondo)
 - Consistency between Regions (AK has been doing this)
- When are these maps published to the web?
 - The public information (PI) copy is put on the web when the PI copy of the application is posted; when the application is officially accepted

IAGC Questions Cont.:

- Why aren't permit extensions and modifications also posted?
 - Traditionally they have not
 - That issue is being worked on right now; more will be released; what and the timing is under discussion

G&G Permitting

It's not just a job, its an Adventure!

Geological and Geophysical Permits and the NEPA Process

Dr. Thomas Bjerstedt
Environmental Operations Section
OEnv GOMR

IAGC Workshop 6-26-13
New Orleans

Overview

Topics Include:

1. Applicable Regulations & Requirements
2. NEPA
3. Site-Specific Environmental Assessment
4. Conditions of Approval & Protective Measures
5. 2012 Activity and Review Process

Statutes & Requirements After OSCLA

Outer Continental Shelf Lands Act (OSCLA) of 1953

1. National Environmental Policy Act (NEPA) of 1969
2. Marine Mammal Protection Act (MMPA) of 1972
3. Endangered Species Act (ESA) of 1973
4. Clean Air Act (CAA) of 1970 with amendments in 1977
5. Clean Water Act (CWA) of 1972, as amended in 1977
6. Oil Pollution Act (OPA) of 1990
7. Resource Conservation and Recovery Act (RCRA) of 1976
8. Marine Plastic Pollution Research and Control Act (MPPRCA) of 1987
9. Magnuson Fishery Conservation and Management Act (MFCMA) of 1976
10. National Historic Preservation Act (NHPA) of 1966
11. Coastal Zone Management Act (CZMA) of 1972
12. Executive Order 11990 (1977), Protection of Wetlands
13. Executive Order 12898 (1998), Environmental Justice
14. Code of Federal Regulation (CFR), 30 CFR 250-270
15. Depart Of the Interior Manual, Part 516

Environmental Laws and Orders



Marine Mammal Protection Act

Federal Water Pollution Control Act

National Historic Preservation Act



Coastal Zone Management Act

NEPA PROCESS

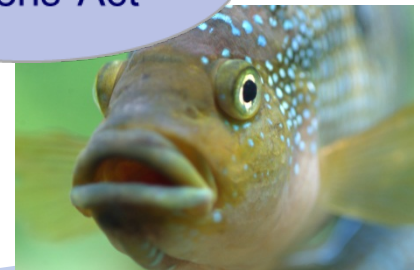
Clean Air Act

Migratory Bird Treaty Act

Magnuson-Stevens Act

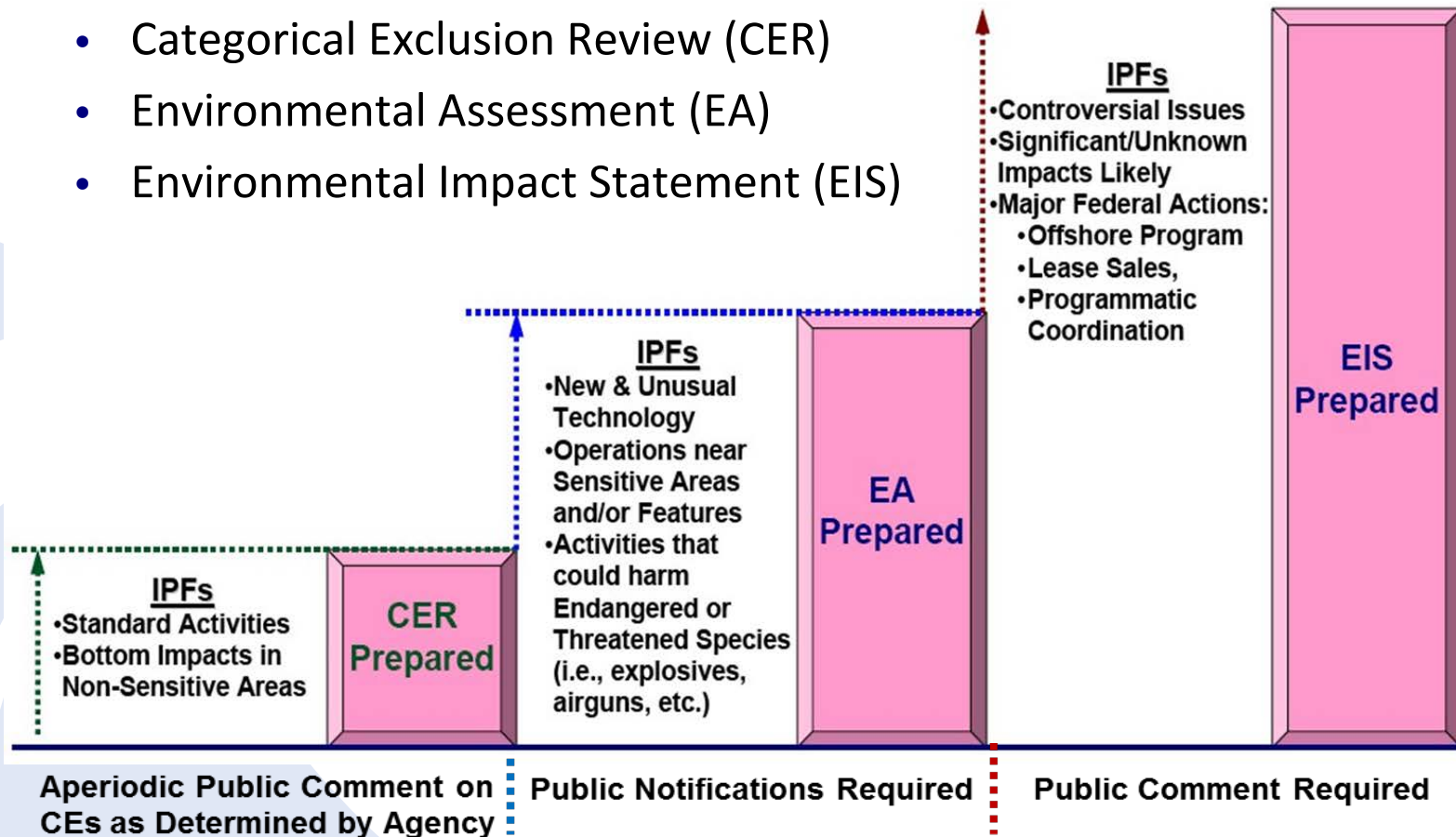
E.O. 12898:
Environmental Justice

Endangered Species Act



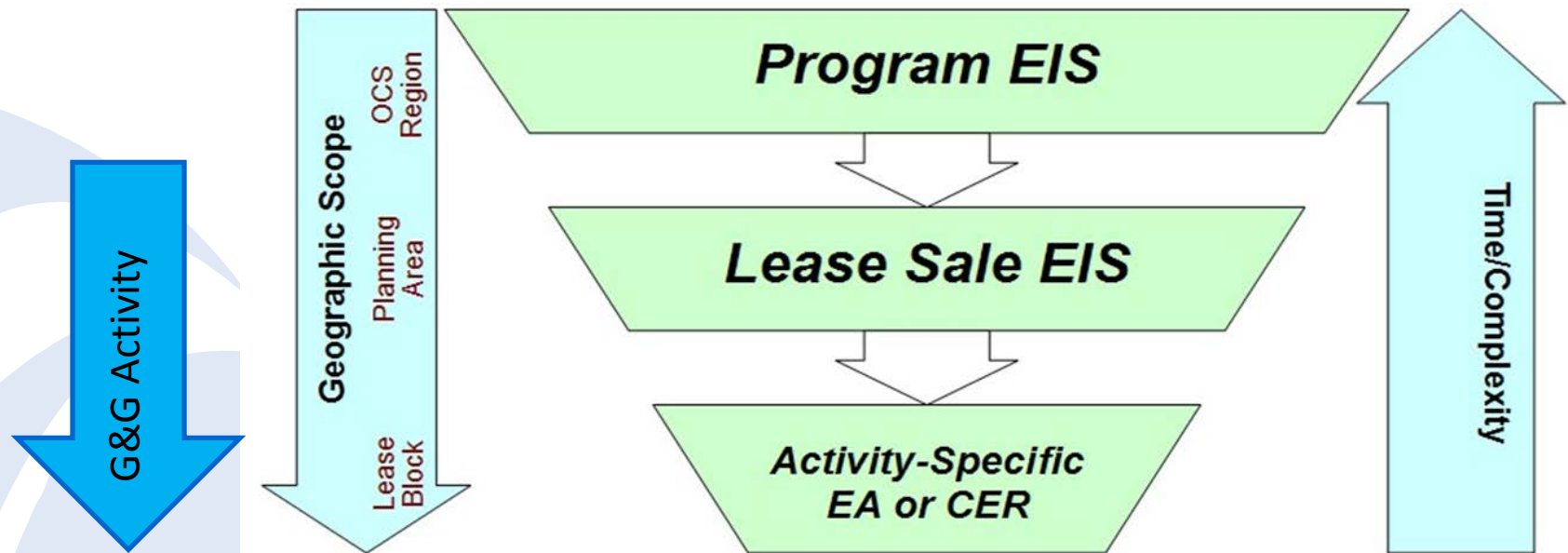
Levels of NEPA Review

- Categorical Exclusion Review (CER)
- Environmental Assessment (EA)
- Environmental Impact Statement (EIS)



NEPA Oversight

BOEM's NEPA Program is organized so that “activity-specific” NEPA analyses are “tiered”/linked to previous programmatic analyses to increase efficiency and reduce repetition of general resource and impact discussions. Reviews focus on the specific issues related to the proposed activity and area.



BOEM's tiering also allows most of the same resource experts who prepared the programmatic analyses to conduct the site-specific reviews; following the process through to compliance

Pre- and Post Lease G&G

- G&G activity in both pre- and post lease settings
- Pre-lease needs G&G Permit
 - Multi-client seismic surveys
 - Operator-contracted seismic surveys
- Post lease needs OCS plan revision for ancillary activity
 - VSP
 - High resolution surveys
 - On-lease 4D

DOI Extraordinary Circumstances

- Determination of what activity is CatExed and what requires an EA determined by DOI extraordinary circumstances defined in 43 CFR 46.215
 - Significant health & safety impacts
 - Highly controversial
 - Significant impacts on unique locations
 - Highly controversial
 - Highly uncertain effects
 - Precedent or decision in principle
 - Significant cumulative impacts
 - Significant impacts on eligible properties
 - Significant impacts of designated species
 - Violate law
 - Disproportionate effect on low income or minorities
 - Affect access to Indian sacred sites
 - Introduce invasive species



BOEM Actions Normally Requiring an EA

- G&G Permit applications
 - Deep stratigraphic test wells
 - Use of solid or liquid explosives
 - Certain survey techniques (airguns)
- Deepwater* Exploration Plans (EPs) and certain plan revisions
- Development Operations Coordination Documents (DOCDs) that include Drilling in Deepwater*
- Development and Production Plans (DPPs) in Eastern Planning Area
- Applications for pipelines that landfall
- Structure removals

*Deepwater = using a subsea or floating BOP in the GOM.

NEPA Compliance

- Depending upon the type of activity being proposed and the location/time period, EAs could include the following resource reviews:
 - Air Quality;
 - Water Quality;
 - Marine mammals;
 - Sea turtles;
 - Benthic Topographic/Biological Features/MPAs;
 - All Protected Species;
 - Submerged Cultural Resources;
 - Space Use Conflicts/Coastal zone issues; and
 - Fisheries/Essential Fish Habitat
- Other-agency coordination issues



Results of an EA

If the impacts are:

- Insignificant - issue a Finding of No Significant Impact (FONSI)
- Insignificant - including assigned protective measures as conditions for approval, issue a FONSI
- Adverse but not significant - including assigned protective measures as conditions for approval, issue a FONSI
- Potentially significant - prepare an Environmental Impact Statement



QUESTIONS?



Pre- and Post Lease G&G

- Underwater impulse noise from airguns is the greatest environmental concern for G&G activity
- Current GOMR policy requires all airgun deployments be evaluated with an environmental assessment
 - High-resolution geophysical surveys w/o airguns can be categorically excluded under current DOI CatEx
 - In NTL revisions (2009-G34 Ancillary Activities) BOEM is working toward clarifying that Office of Environment be notified of all high-resolution geophysical surveys
 - Current Ancillary Activities NTL only requires notification >200 m water depth

Conditions of Approval

- NEPA regulation (40 CFR 1508.20) defines mitigation as:
 1. Avoiding the impact altogether
 2. Minimizing impacts by limiting the degree or magnitude of the action
 3. Rectifying the impact by restoring the affected environment
 4. Reducing or eliminating the impact over time by preservation and maintenance operations
 5. Compensating for the impact
- Category 3, 4, and 5 do not apply to OCS activity

Avoid or Reduce Impacts

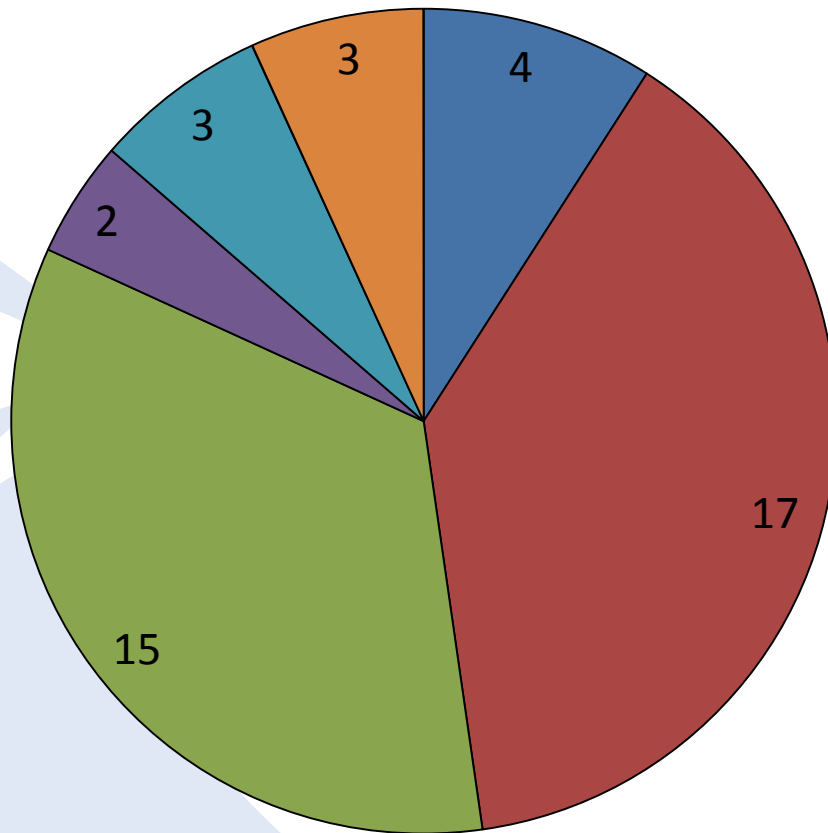
- Avoid impacts
 - Bottom disturbances - activity setbacks, and “no activity” zones
- Reduce Impacts
 - Seismic surveying – exclusion zones, Protected Species Observers, ramp-up/shutdown criteria, vessel strike avoidance, trash and debris awareness, Passive Acoustic Monitoring in some instances
 - Develop monitoring programs that report outcomes
 - Assess effectiveness
 - Modify
 - Coordinate with environmental resource agencies

Permit Modifications

- G&G Permit Modifications
 - All need evaluation
 - Most need new analyses (EA)
 - Additional seismic source vessel
 - Added survey type
 - Survey area reconfiguration, multiple source proximity combination of source vessel and proximity
 - Increase in survey area
 - Some can be approved under the initial EA/FONSI
 - Changes judged to be *de minimus*

G&G Activity 2012

Total = 42 EAs



■ 2D Deep Penetration

■ 3D w/ Ocean Bottom Nodes or OB Cables

■ 3D Full, Wide, or Narrow Azimuth

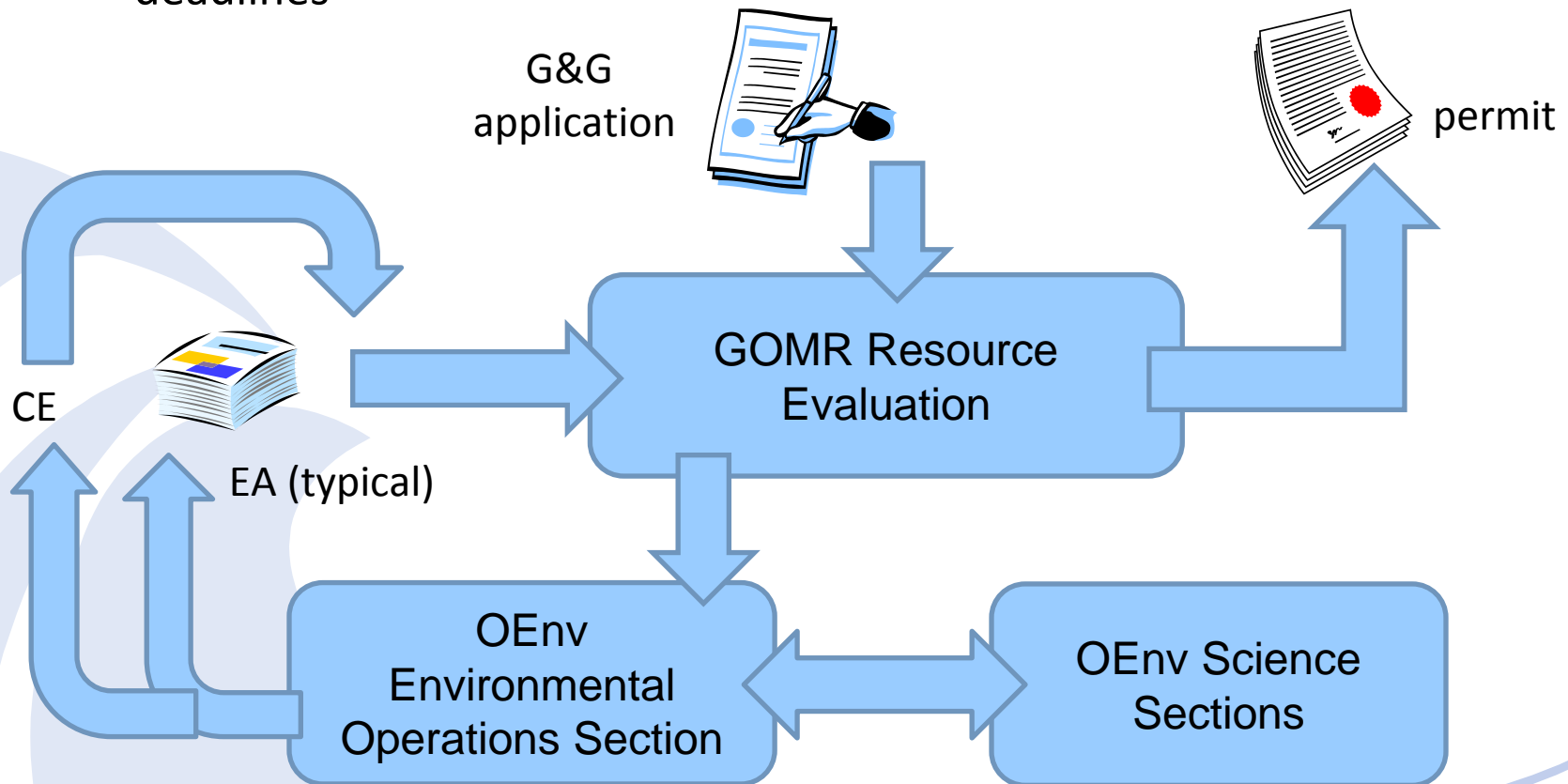
■ 3D Full Azimuth Dual Coil

■ Controlled Source Electromagnetic w/ OBN

■ 2D HiRes w/ airguns

OEnv/EOS G&G Review Process

- OEnv process time is not defined by regulation, but we strive to be responsive within a work load that includes regulatory deadlines



Why a NMFS Review

Post-spill lawsuit on MMPA/ESA compliance in Q2 2010

1. Challenged MMPA status since GOM G&G PEA in 2004
2. Our PEA was not accepted as adequate by NMFS – they began their own EIS in 2006
3. Macondo
4. Lawsuit by Center for Bio Diversity, NRDC, others
5. Draft settlement agreement with plaintiffs has accompanied stay to allow interim GOM G&G activity, subject to certain conditions
6. 10 calendar day pre-approval review by NMFS was part of the agreement
7. Agreement signed, NMFS reviews to continue
8. BOEM/NMFS now scoping for GOM G&G EIS required by agreement

QUESTIONS?



Overview of Archaeological Review Procedures and Requirements for G&G Applications

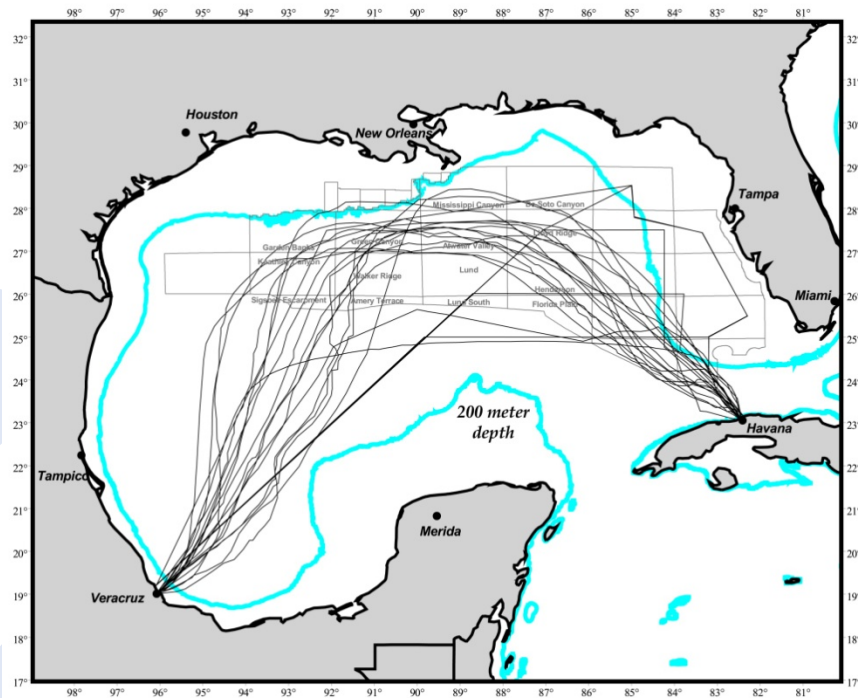
Doug Jones, M.A.
Marine Archaeologist
Biological and Social Sciences Section
OEnv GOMR

**IAGC Workshop 6-26-13
New Orleans**

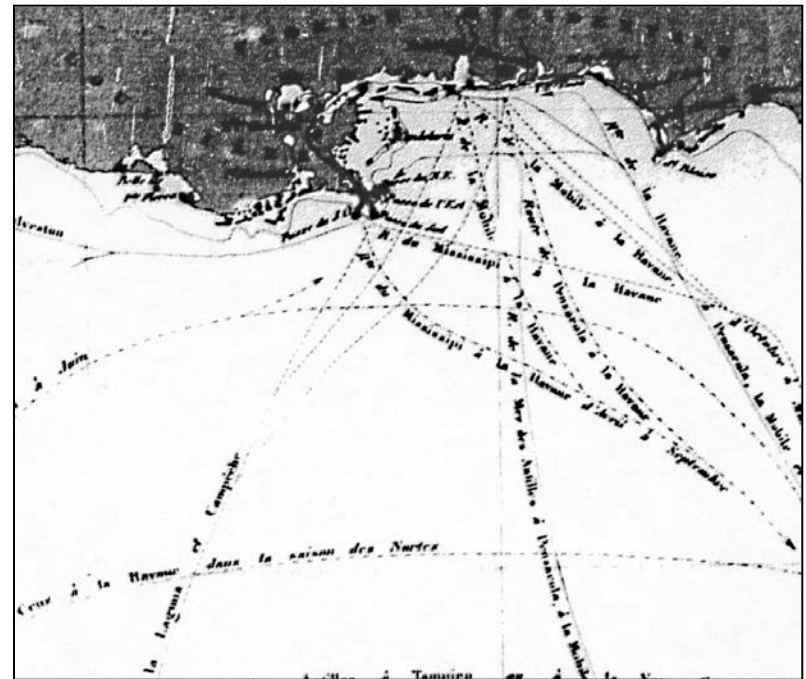
Significance of Archaeological Resources

Archaeological resources on the OCS, including submerged prehistoric Native American sites and historic shipwrecks, are the most unique resources under the agency's purview as they are the only resources that are 100% non-renewable, irreplaceable, and their discovery is unpredictable. Furthermore, they are the only resources directly related to past human behavior, are a fundamental element of our nation's heritage, and have the potential to contain human remains.

Historic Sailing Routes in the GOM



Sailing Routes of the New Spain Fleets



1805 map of sailing routes to/from New Orleans

Historic Preservation Legislation

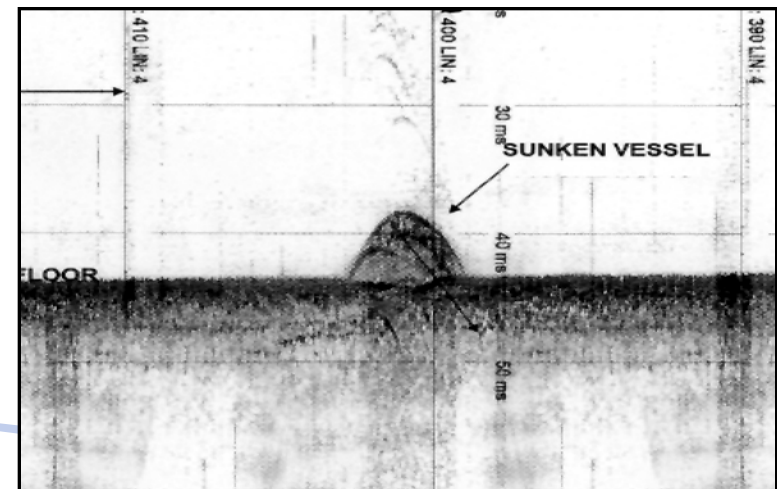
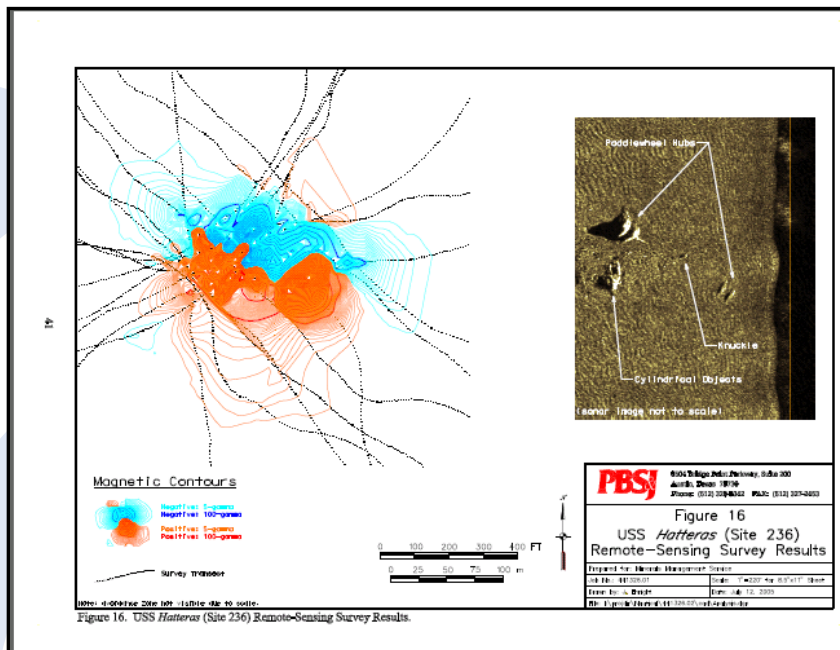
- National Historic Preservation Act of 1966 (NHPA): Each Federal agency must establish a preservation program for the protection of historic properties.
- Section 106 (NHPA): Requires that all Federal agencies, prior to permitting or funding a project, take into consideration the effect of that project on cultural resources.
- Sunken Military Craft Act (2004): Confirms that sunken U.S. military vessels and aircraft are sovereign property of the United States regardless of the passage of time.
- Executive Order 11593 (1971): Administer cultural resources under Federal control in a spirit of stewardship and institute procedures to assure that Federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures and objects of historical, architectural or archaeological significance.

BOEM's Historic Preservation Program

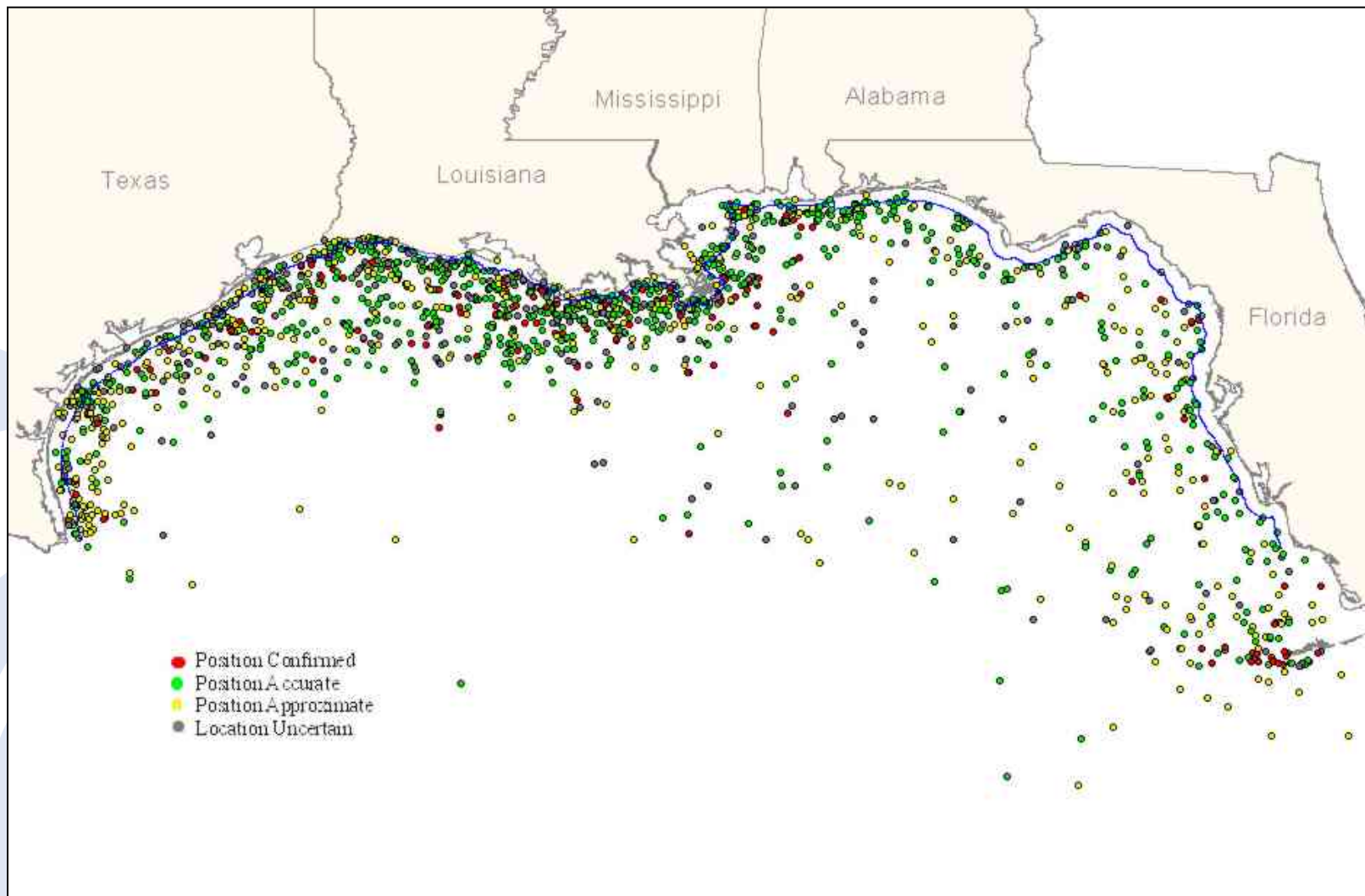
- Ensures compliance with Section 106 (NHPA) by:
 - Identifying historic and prehistoric properties on the OCS
 - Assessing adverse effects from permitted actions
 - Resolving or mitigating adverse effects
- Participates in Region's Seafloor Monitoring Program and compliance reviews via remote-sensing surveys and diving investigations
- Assists Environmental Studies Program:
 - Sponsor scientific studies to identify, analyze, and monitor archaeological sites
 - Use this information to inform NEPA compliance reviews and site mitigation strategies

GOMR OCS Survey Requirements

BOEM requires remote sensing surveys (magnetometer, sidescan sonar, subbottom profiler) of the area of proposed seafloor impacts prior to permitting. If a potential archaeological resource is identified, avoidance or further investigation is required. Methods and reporting guidelines are listed in NTL 2005-G07.

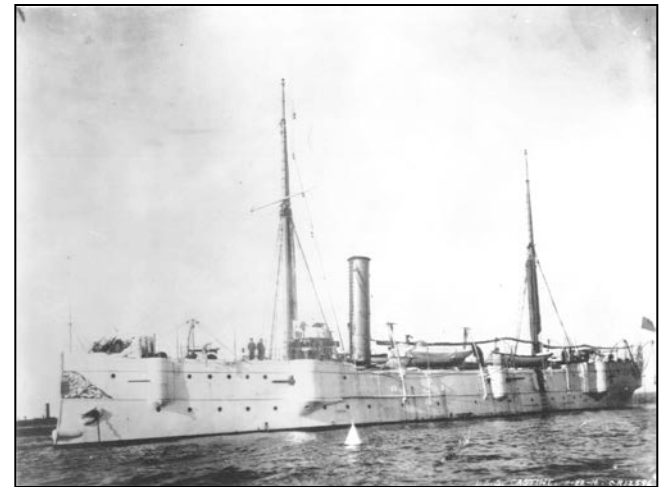
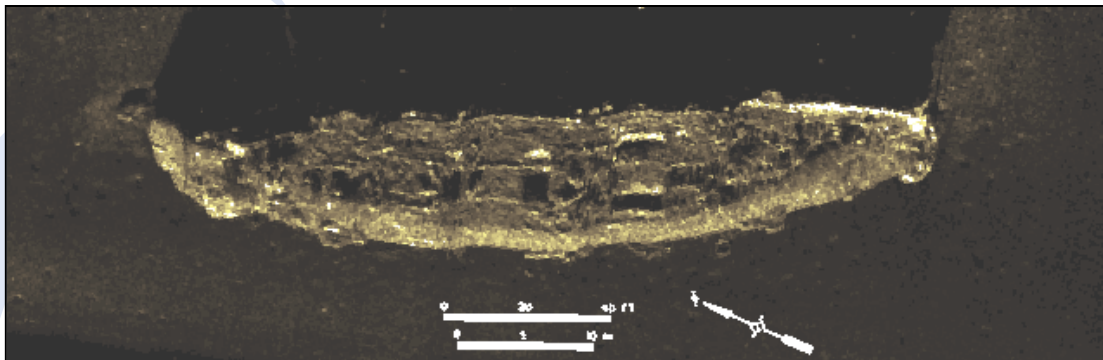
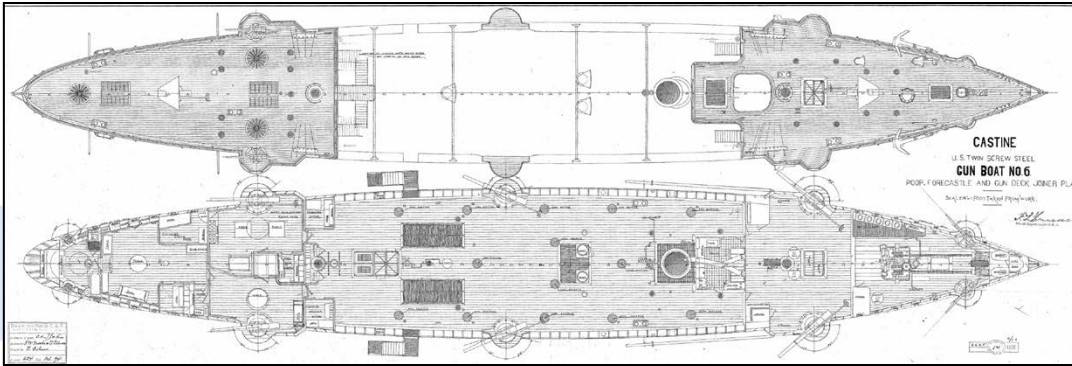


Known and Reported Shipwrecks in the GOM



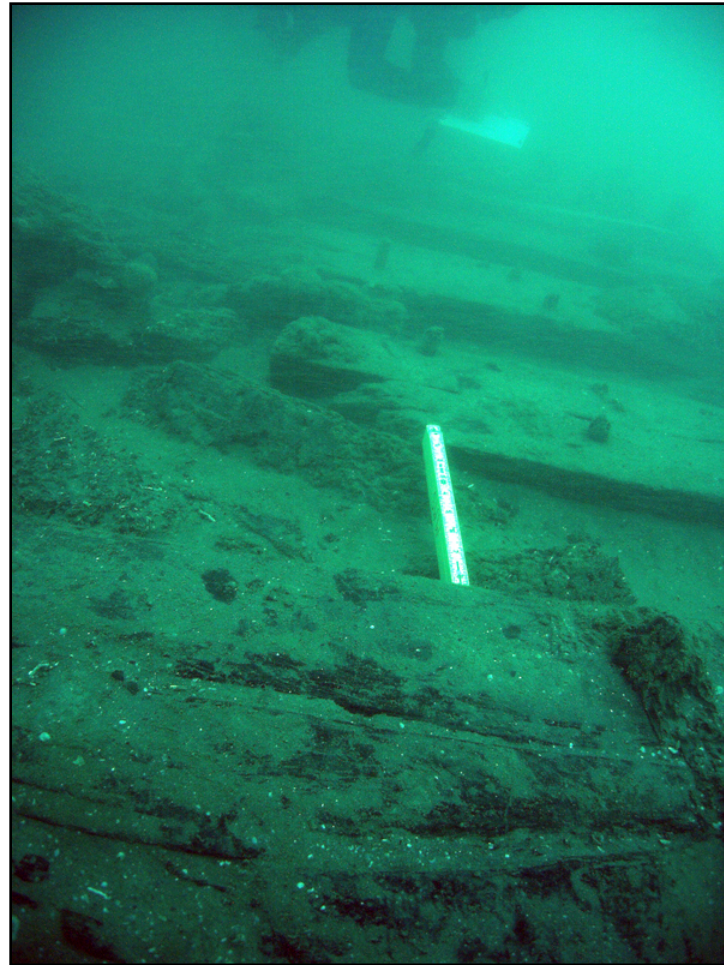
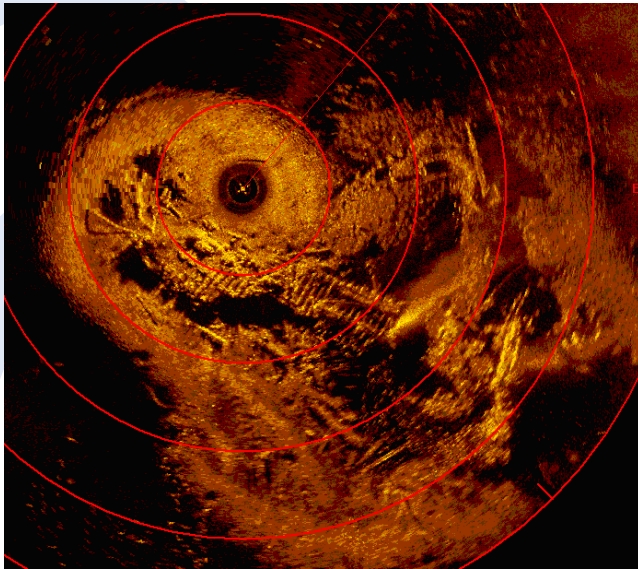
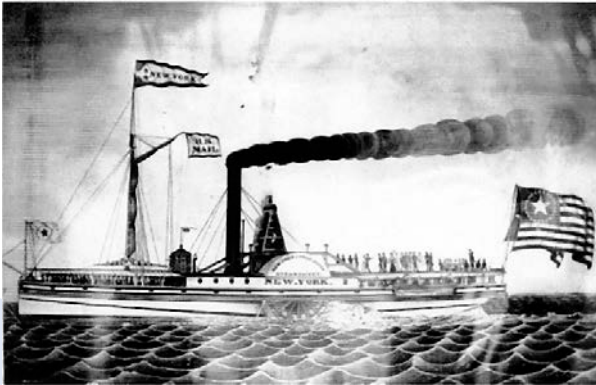
Historic Shipwrecks in the GOM

USS Castine



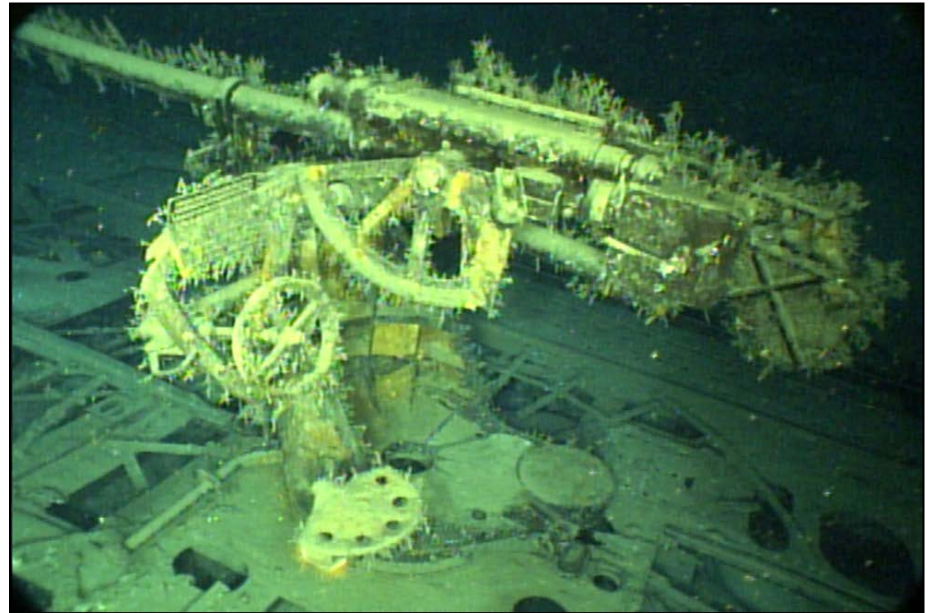
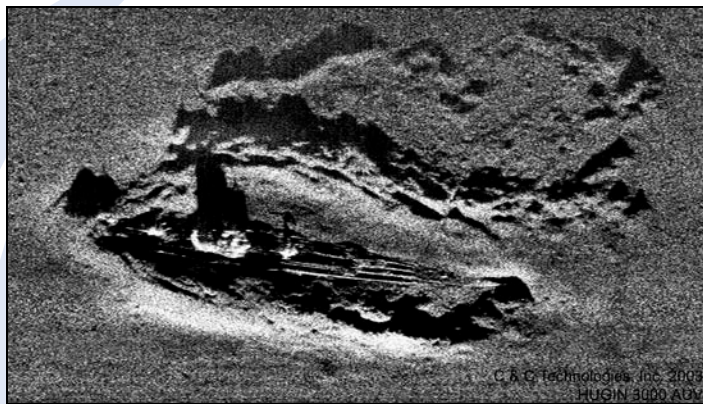
Historic Shipwrecks in the GOM

SS New York



Historic Shipwrecks in the GOM

U-166

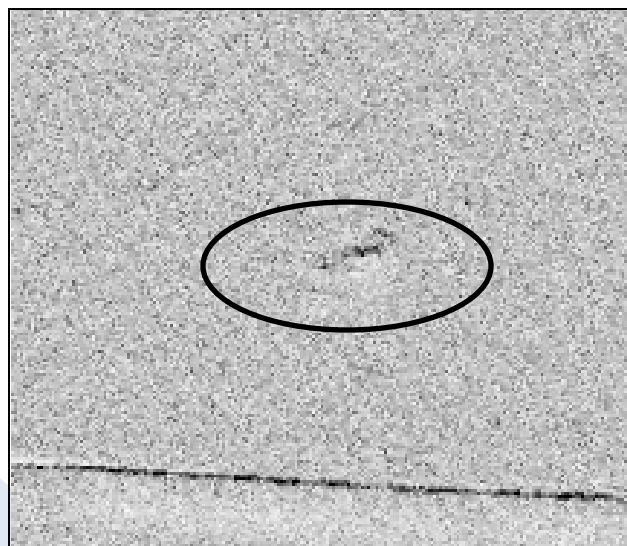
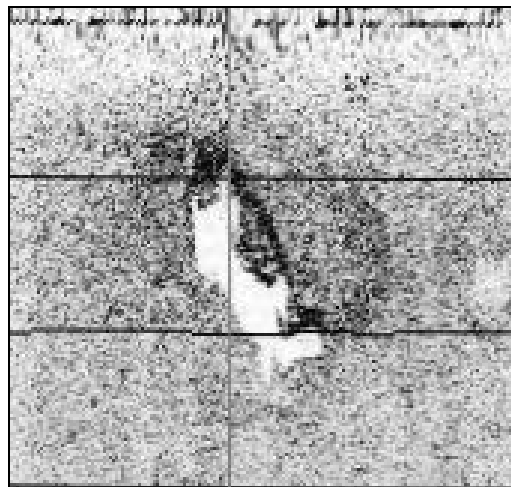
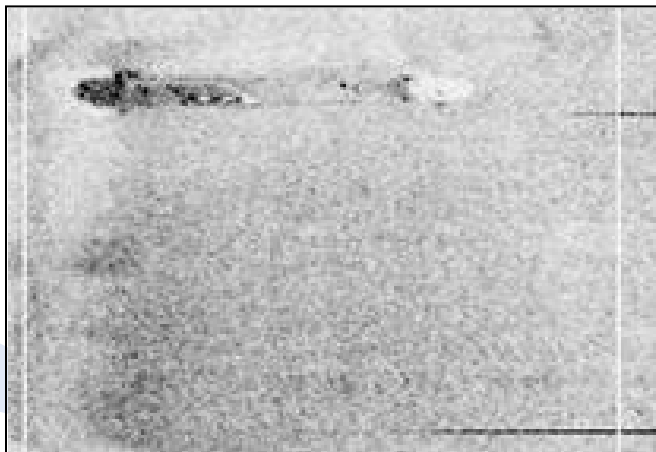


Historic Shipwrecks in the GOM

Monterrey Wreck

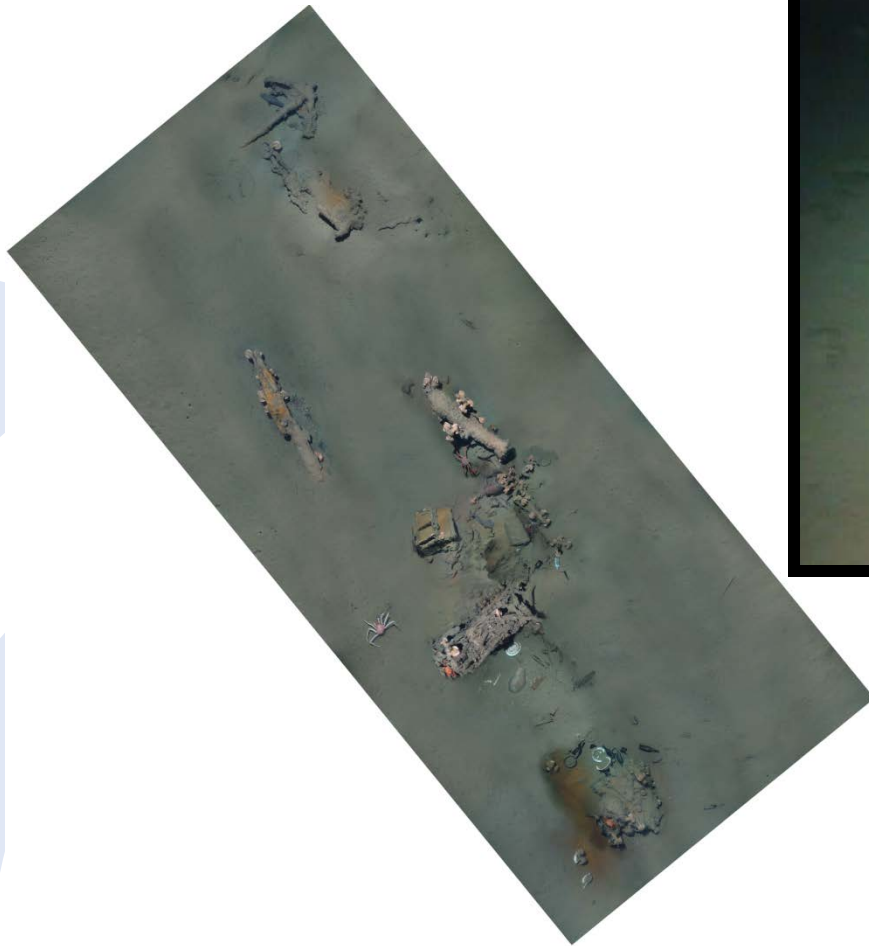


Unidentified Sonar Targets Requiring Avoidance

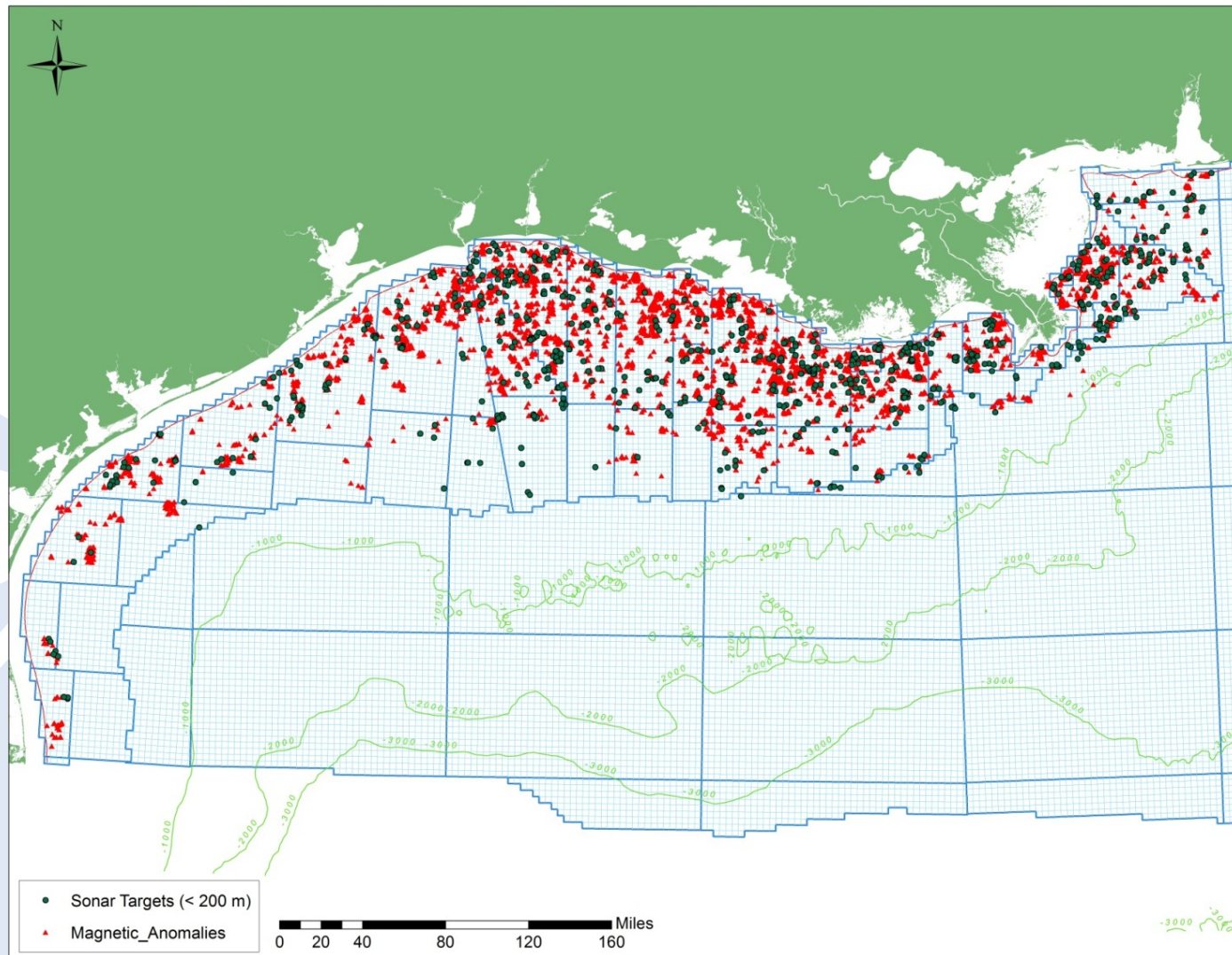


Historic Shipwrecks in the GOM

Mardi Gras Wreck



Magnetic Anomalies and Sonar Targets Requiring Avoidance

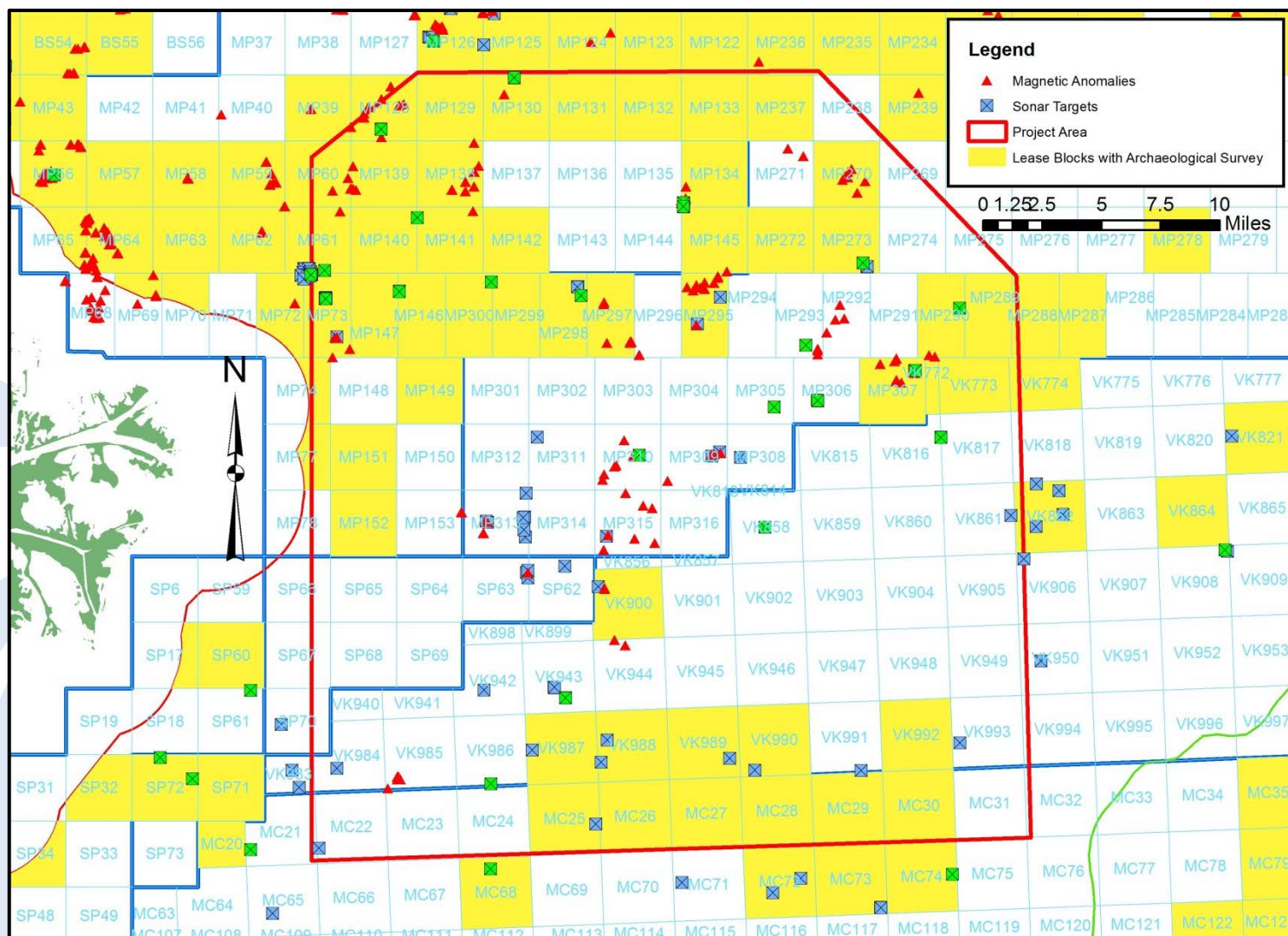


BOEM Information Needs

What do you need to submit with your application?

- Map (and shape file) showing the location/boundary of all bottom disturbing activities
 - OBCs/OBNs/CSEMs/coring
 - Also dimensions, weight and spacing
 - Anchors or jack-up vessel locations
 - Other cables or associated bottom equipment
- How will equipment be deployed?
 - ROV
 - Gravity drop
 - What is the drop accuracy within project water depths?
 - Other?
 - Provide as much detail as possible
- How will equipment be retrieved?
 - Cable spool down/spool up
 - Timed anchor release
 - ROV
- What are your procedures if equipment gets snagged or lost?
 - Diver retrieval
 - ROV
 - Pull harder?

BOEM Information Needs

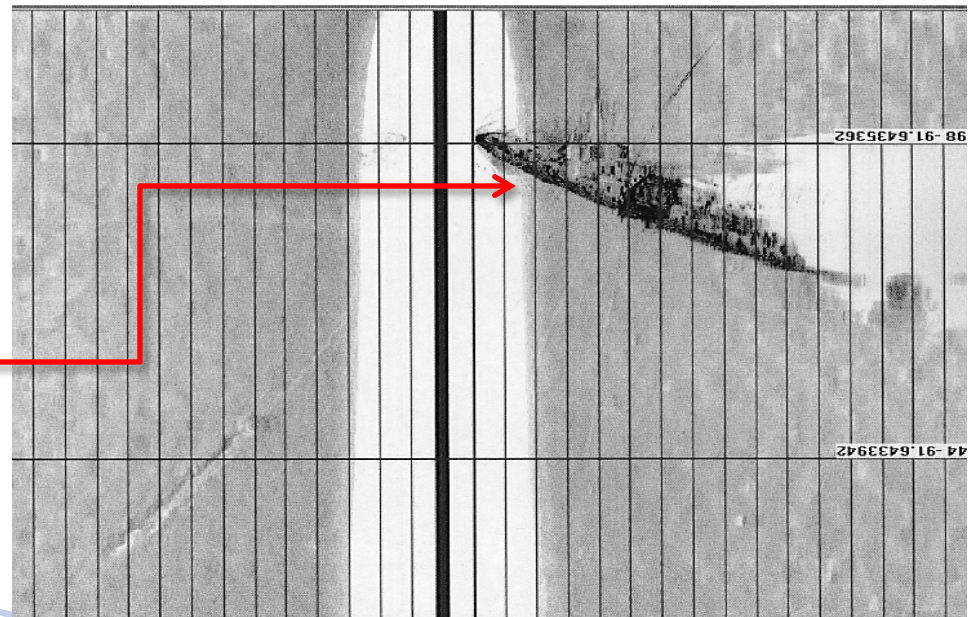


Unsurveyed blocks in a G&G project area

Damage to Unsurveyed Wrecks



Pipeline laid across a 19th century wreck at over 2,500 ft depth



Drill rig anchor snagged on the oil tanker S.S. *Gulfstag*

BOEM Permit Requirements

What will your archaeology mitigation say?

- Avoid or investigate known and potential archaeological sites
 - Factor drop accuracy into the avoidance distances
 - Known historic wrecks and sonar targets will typically require avoidances between 100 - 1,000 feet
 - If avoidance is not possible, coordinate with BOEM for additional diver or ROV investigation
- If any potential sites are discovered, halt operations and contact BOEM/BSEE for further instructions within 48 hrs
- If divers or ROV are deployed to retrieve gear or if additional remote-sensing data is collected for any reason, provide a report
- Report any unforeseen circumstances
 - Did your OBCs/OBNs get displaced by any external, natural, or man-made causes

BOEM Permit Requirements

What do you need to provide in your post-activity report?

- As-placed locations of all bottom disturbances
 - OBC/OBN/CSEM/coring
 - Anchors
 - Jack-up rig
 - Include as shape files or .DWG files as well as a hardcopy map
- Additional remote-sensing data if collected
 - Sonar imagery
 - ROV video
- Reports of lost/snagged equipment
 - Details of diver deployments if necessary
 - Diver video, field notes, and/or survey data may be requested

BOEM Permit Requirements

If mitigations are not followed what additional actions may BSEE require?

- You will need to demonstrate that archaeological sites were not damaged by your activities
 - Remote-sensing survey
 - ROV or diver investigation

BOEM Permit Requirements

Other Issues

- Wreck locations are proprietary
 - Do not include location information in publicly available materials or in multi-client surveys
- Projects in both Federal and State waters will require coordination and concurrence from State Historic Preservation Office

Contact Information:

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<http://www.boem.gov/Environmental-Stewardship/Archaeology/Gulf-of-Mexico-Archaeological-Information.aspx>

BSEE Archaeology:

Chris Horrell

Christopher.Horrell@bsee.gov

Current Gulf of Mexico and Atlantic PEIS Status

- For the most recent information concerning the Gulf of Mexico PEIS please visit the BOEM web site at:
 - <http://www.boem.gov/GOM-G-G-PEIS/>
- For the most recent information concerning the Atlantic PEIS please visit the BOEM web site at:
 - <http://www.boem.gov/Oil-and-Gas-Energy-Program/GOMR/GandG.aspx>